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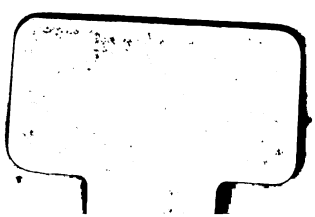
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HOUSEHOLD MEDICINE,

SURGERY,

SICK-ROOM MANAGEMENT,

AND



Diet for Invalids.

"How best the fickle fabric to support
Of mortal man: in healthful body, how
A healthful mind the longest to maintain."

LONDON:
WM. S. ORR & CO., AMEN CORNER.
DUBLIN: J. MCGLASHAN, SACKVILLE STREET.

MDCCCLIV.

151. o. 240.

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HOUSEHOLD MEDICINE AND SURGERY.

CHAPTER I.

INTRODUCTORY.

WIDELY as men differ from each other, on almost every subject that either observation may give rise to, or speculation may suggest, they seem to display a tolerable unanimity on the subject of health, and the prolongation of life. To recover impaired health there is no worldly sacrifice which the invalid would refuse to make; and to prolong the flickering flame of life, even a few days longer, there are few so old who would not willingly barter in exchange their most valuable possession. When, however, serious disease has attacked the body, or when the sands of life are at their lowest ebb, the issues of life and death are then almost beyond the control of man, and the merest accident of the moment may turn the scale in favour of one or other of these contingencies. So precarious is human existence, apparently, at the best, and so uncertain the numbered hour that lays us in the dust, that it is the buoyancy of hope alone which supports every one in the expectation that he may still prolong his life to another day.

The inestimable gift of health, then, cannot be too highly prized; nor are there any means to secure it which man does not most anxiously compass, in order to attain his end. All are not alike wise in seeking it by a proper attention to their clothing, exercise, and diet; all are not equally cautious in avoiding exposure to causes which tend to disturb its harmony; and all are not naturally endowed with that strength of constitution which enables them to resist vigorously the atmospheric vicissitudes to which we are subjected, daily and hourly, in our variable climate. Moreover, many inherit a sick

and weakly frame from their parents, requiring constant nurture and advice to preserve the fabric of the body in its requisite health.

It is commonly affirmed that the "Schoolmaster is abroad;" but with far more semblance of truth, we think, it may be asserted that the "Doctor is at home;" for there is no person who does not fancy he knows something of physic, however illiterate he may otherwise be. It is a natural trait in the character of the animal man to doctor himself; and however strong all reason be against it, all nature is for it. The anathemas of the college, the denouncements of the legitimate practitioners, and even the penalties enacted by the State, are as the idle wind in their efficiency to curb or to restrain the illegitimate practice of the art of curing diseases. Without, then, opposing myself to the colleges and their councils, to the practising physician, or to the dispensing apothecary; or without, on the other hand, in the least degree espousing the doctrines or the party of the quacks—the irregular practitioners, to whom I shall very freely allude—I confess that I see not why physic should claim exemption from being explained to the people in a popular manner, as much as any of the numerous sciences with which it is the vogue of the day to encumber the public mind. But further, I think that there is an imperious necessity for this kind of information being unfolded to them, if it were for no other reason than to teach that the human body is a most delicate and complicated piece of mechanism, and that the utmost care, and skill, and caution, are requisite in handling its organization.

If men will persist in trenching on what the medical faculty deem forbidden ground, it is assuredly a bounden duty to do so with the least possible injury to themselves—an object which, it is conceived, will be readily gained by explaining the circumstances under which plain common sense, with a few simple doctrines and appliances may be justified in acting for the behoof of the sick, and those circumstances under which it will be better, if the skill of a practised medical man be consulted. I would not convert every man into a doctor; but I would desire to see him acquainted with certain facts and general principles regarding the economy of his own body, the timely application of which will save him much unnecessary pain and sickness, and often constitute the best safeguard against any serious illness. With these every one should be acquainted, even though he may neither have occasion to require them for himself, nor to prescribe them for others. But all are not equally fortunate, and the occasions are numerous in which, even in the midst of our own dense cities, we cannot get medical aid the instant it is required. It fol-

lows naturally, therefore, that we must one and all of us feel most anxious to know what is the most prudent and the best to be done till that assistance arrives. Under such conditions, inevitably, every man must become his own physician; and as we are all exposed to such casualties, a plain explanation of these various accidents in life, it is judged, cannot be without its good effects on the welfare of society, as well as on the interests of individuals.

CHAPTER II.

QUACKERY.

PROPOSING to render this work a complete manual of *household* medicine, adapted to the understanding and capacity of every class of the community, I believe that it will greatly tend to clear the way, if I now offer to my readers a few remarks on the legitimate and illegitimate exercise of the art of curing diseases. This I feel the more inclined to do, as for the last twenty or thirty years, through the agency of Mechanics' Institutions and other analogous associations, much highly-valuable and useful information on PHYSIOLOGY, or the laws of the physical constitution of the human body, has been zealously and very generally diffused. This knowledge is now beginning to produce its proper fruits, and these, fortunately, of a good and wholesome character. However rampant, and in the ascendant, the practices of the quack may be, among the unreflecting and credulous portion of mankind, from the too-easy acquiescing pliability of an uneducated and uninformed people, I venture to assert that the votaries of that craft are not to be numbered among those who value knowledge because it is power.

The evils of quackery are manifold, and they may all be traced to ignorance and credulity. And, moreover, notwithstanding our boasted intelligence, and the much vaunted highly enlightened state of the public mind, it must be recollected that even now, in Great Britain, the people are not emancipated from the trammels of witchcraft, while ghost-craft, clairvoyance, and table-turning have their believers. It were scarcely, then, to be anticipated that we should so easily disencumber ourselves of the whole mass of our popular superstitions; and of these the grossest and most widely diffused is the baneful pestilence

which saps the sinews and strength of our people throughout the whole breadth and length of our land, in the preposterous belief, that *one* remedy is able to cure all the varied and endless ills to which human flesh is heir. It matters not whether this be the plain, undisguised quack recipe, in the shape of a Morrison's pill, or a Holloway's ointment, equally suited to all ages, sexes, and diseases; or if it comes to us in the demi-scientific garb of hydropathy, homœopathy, or any other pseudo-science, which the professed curer of all diseases may choose to designate, and invest with the mysterious talisman of a Greek derivation.

To enter into anything like a formal refutation of the whole host and family of quack medicines, would be to trifle with the common sense of my readers; but I must put one question to those who are prone to catch at the universal panacea of the nostrum-monger. I ask them, whether all the varied kinds of diseases are not produced by an infinite diversity of causes; and whether there are not diseases peculiar to different periods of life, as there are also those peculiarly incident to both sexes? The only answer to this question is:—if it be true that there exists such a variety in the range of the causes of diseases—such a wide difference in those peculiar to different epochs of life—such a discrepancy in those peculiar to the sexes, it cannot but be conceded that, in all probability, where there is a difference in the *cause*, a difference in the kind of remedy is no less essentially demanded.

It is from profound ignorance of the wonderfully complex machinery of the human frame, that the impudent pretender propounds his nostrum; and it is under the influence of the same ignorance that the pliant public opens its mouth to swallow pills by the bushel and draughts by the gallon.

But the whole question between the public and its medical advisers, truly lies in a small compass. If advice, sound and honest, and directed by a perfect knowledge of the laws of the animal economy in health and in disease, be required, it is very obvious that such acquirements can only be found among regularly instructed medical men. But, on the other hand, if life is held so cheap, and health itself so poorly estimated, that it can be conceived the rude and uninformed may restore the sweet harmony of the untuned or broken instrument, then indeed a host of charlatans await on the highways, and at the corners of the streets, ready to commence their foul employ, and destroy the poor deserted frame they yet pretend to heal. When, long years ago, I commenced the study of the human consti-

tution, my wonder was, *not* how the body fell ill, but how such delicate and intricate machinery could last uninjured even for an hour. Deeply, then, was I impressed with the wonderful adjustments of all the organs of the human body; and every succeeding day has confirmed me in my admiration of the skill and perfection with which that most exquisite piece of machinery has been constructed.

I conceive, then, ignorance to be the basis of the whole system of quackery that pervades our land—ignorance not only in its practitioners, but in its patrons; and it is no light task that I assume to myself in endeavouring to dispel that mist of superstition and want of knowledge with which we are encompassed, and whose baneful influence is not confined to one class of society. It is needless here to expatiate on the importance of a familiar acquaintance with those causes which secure the enjoyment of good health, and of the means which enable us to resist the first beginnings of disease.

I will not further extend this brief notice. I think I have said enough to show the unstable basis of the whole system of quackery. I know I have done so solely from the love of truth; and I feel assured, that time, the great teacher, will eventually corroborate and substantiate the justice of the principles I have advocated and intend to adopt, as my guide throughout the whole course of this work. To secure a sound system of the philosophy of health to the people is my leading object—the advancement of truth my only end.

CHAPTER III.

THE INHERENT TENDENCY OF MAN TO SPECULATE ON THE PHENOMENA OF DISEASE.

The science of medicine, like all other human arts, is progressive; and much do we owe to our predecessors for the important and valuable truths with which they have successively enriched the sphere of its domain. The history of its gradual advancement from the rude discipline of the savage, contented with the culling of a few simples, or the supposed more potent influence of charm and incantations—of which I think I can still descry some traces among the moderns—is an ample field for the speculative philosopher; since the modes in which we have emerged from error must ever be a subject of inter-

esting consideration. Nor is this important fact less deserving of notice, as it is also one which should never be lost sight of, that the characters of diseases are usually very varied, and that scarce such a condition is ever represented in nature as that of a simple disease.

This circumstance, which cannot be too particularly insisted upon, especially to those to whom I now address myself, and whom I presume to be little versant with, if not altogether ignorant, of the laws of diseased action, arises from two distinct causes. The fact is, that the human body is composed of a diversity of parts, or organs, performing various and different functions, all conspiring to one end —the life and health of the individual—and therefore mutually connected with each other; so that any disturbance in the functions or duties of *one* part, more or less directly involves the remainder. It is in this manner, when the perspiration is checked from the application of cold, that the kidneys act more energetically, or the secretions of the bowels become unusually excited, or, perhaps, local inflammation may follow, or even general fever may subsequently supervene.

The second cause depends on a condition that is only observed to occur in living bodies. and which is commonly known by the name of SYMPATHY. Though this might, at first sight, be considered akin to the previously-mentioned state of the animal system, it nevertheless exhibits features which at once proclaim its distinct and decided difference—the principle being that a remote organ of the body, without any diseased action subsisting in the intermediate parts, participates in the diseased action, through the medium of the nerves. This will be better understood by an example:—For instance, when the stomach is out of order, severe head-ache may ensue; or specks may appear to float up and down before the eyes, to the great disparagement of the organ of vision; or even a state of actual blindness may succeed. This, then, is said to arise from sympathy, and examples of it are of daily occurrence, affecting almost every organ of the human body.

Seeing, then, the rational interest which naturally attaches itself to the active functions of the human body, in disease as well as in health, it would be idle to attempt to force upon the minds of the people the mere dictation of authorities. Man is ever inquiring after reasons; and if he is not supplied with the proper elements on which a sound notion may be constructed, and enjoy a secure basis, he will, nevertheless, form one, however far from the mark and inapplicable it may be. Of the truth of the theory he has thus formed he will

feel the more convinced, in proportion as it is opposed to the views of others; for, according to the old established rule—

"Persuade a man against his will,
He's of the same opinion still."

All men are theorists—all men speculate—all watch events, and interrogate their causes. Even the "moping idiot and the madman gay" speculate betimes on the drollery of the insanity and hallucinations of their fellow-men. We all know, too, that the freshness and lively innocence of youthful life fearlessly propound questions which often put adult manhood to the blush, and sometimes puzzle the wisest.

Observing, then, this almost universal desire to know the *why* and the *wherefore*, I conceive it will facilitate, in a very great degree, the right apprehension, as well as a proper estimate, of the following remarks on domestic medicine, if a few preliminary pages are devoted to some of the more prominent features of human physiology. These it will be my especial object to make as concise and brief as possible, making all reasonable allowance for clearness and precision; and after this initiation into some of the mysteries of the human frame, my remarks upon the different affections to which from the cradle to the grave the body is subject, will be more readily understood, and more easily followed.

CHAPTER IV.

THE FUNCTIONS OF THE HUMAN BODY.

If the human body be considered as a mere specimen of happily adjusted anatomical arrangements, we shall see much to reflect upon, and much to admire. This, however, is the peculiar department of the anatomist, with which, at present, I have little concern. My office is limited to describe the action, duty, or function of different parts of the body, and that in a very general manner; but I trust with sufficient precision to render my observations upon the diseases of the human frame, which are to follow, clear and intelligible.

And here it may not be inappropriate to lay down the fundamental rule, that all animals are constructed upon one general plan, and that the gradation of organized substances is one of the most beautiful manifestations of the order and harmony which subsist in the relations of all earthly things. By insensible steps we pass from mineral

substances to the lowest tribe of vegetables and animals, and from these again to the highest tribes of both, till, following the latter in the ascending scale, we arrive at immortal man! Thus, among vegetables, how gradual is the ascent through the humble acotyledonous plants—the algæ, fungi, lichens, hepaticæ, and musci,—to the filices and other monocotyledonous orders, and through these again to the dycotyledonous, till we reach the most stately of these: and, among animals, how imperceptible is our progress through the invertebrate animals—the zoophytes, worms, and insects, on the one hand, and the vertebrate animals—the fishes, reptiles, birds, and mammals, on the other, till we finish with the most exalted example of animated nature!

"Each moss,
Each shell, each crawling insect, holds a rank
Important in the plan of Him who framed
This scale of beings—holds a rank, which lost,
Would break the chain, and leave behind a gap,
Which Nature's self would rue."

Yes!

"All nature is but *art* unknown to thee—
All chance, *direction* which thou canst not see;"

and the germs of all animals are perhaps essentially the same. The foundation-stone of all, if I may so express it, is of the self same number and form; and upon each of these is reared a superstructure, always of the same character, but higher or lower, according to the rank which each individual being is to hold in the scale of creation. To each has the Creator said, "Thus far shalt thou go, and no farther." Of some the progress has been very soon arrested; to others, a greater advancement has been allowed; while in man, to so towering a height has he been permitted to proceed, that he is tempted to deny his affinity with the others, and to lose sight of the humble beginnings on which all equally rest. And why should man, in his arrogance, claim to himself a nature and essential organization different from even the lowest animated being. The same Divine hand which has permitted him to build so much higher than they upon the same foundation, might have permitted—can we doubt he has not permitted?—other beings to proceed infinitely farther still; so that to them, man is far, far more insignificant and contemptible than to him is the veriest worm that crawls.

May this view tend to inspire us at once with humility and gratitude—with humility, in reflecting on the grovelling nature to which we are so intimately allied—and with gratitude in contemplating as

well the comparative superiority which we have been allowed to attain, even in this state of our existence, as the Divine promise, which has in mercy been extended to us, of a more exalted and better condition in the world to come!

But to return from this digression,—the substance of which, however, I must beg the reader always to keep in mind,—a *function* may be defined to be the proper action of a living organ, or set of living organs, conducive to some definite end in the animal economy. Every action of every individual organ of the animal body is its function; and the due performance of this is the only end of its existence. But the functions, collectively considered, are commonly classified according to the particular end to which more or fewer of these actions are subservient; since they would otherwise be altogether innumerable, and the consideration of them would involve a series of useless repetitions, and present an inextricable chaos, without beginning or end. In this view, therefore, we include, under the head of the function of digestion, all the actions of the several parts of the intestinal canal and its appendages which are instrumental to the assimilation of the food; under that of the function of circulation, all the actions of the heart, blood-vessels, and other parts, which are subservient to the propulsion of the blood; and under that of the function of respiration, all the actions of the chest and its contents, which minister to the conversion of venous into arterial blood, and many other important ends. It is obvious, therefore, that the number of the functions is almost entirely arbitrary, since each of those I have mentioned includes, perhaps, twenty different functions of twenty different parts; and if their enumeration be so indefinite, their arrangement is hardly less so. By the Father of Medicine, indeed, the sum of the functions of the living body was aptly compared to a circle, in describing which we may begin at any point, and set off in any direction we choose.

The whole material world presents two kinds of matter—living objects and dead objects. The former are termed ORGANIC, because they are supplied with certain parts, or *organs*, by means of which they live and carry on all the functions proper to life. The latter, not being provided with any such arrangement, or organs, includes the whole of the material world, with the exception of the animal and vegetable creation. They are, consequently, denominated INORGANIC, or not provided with *organs*.

That portion of the material world which is possessed of life,* is either of an animal or vegetable nature—it is, in short, ORGANIC. But all organic bodies have not the same properties, though all possess the same common organs, by which the function of life, or existence, is maintained. Hence arise distinctions between the animal and vegetable kingdoms; and hence, also, the origin of the classification of functions.

The organic functions are those destined to maintain individual existence, whether it be animal or vegetable, altogether independent of any other power or property possessed by the particular form of organization in question. Thus a plant lives, grows, and dies. It takes in matters for its nutrition, or growth; it circulates these through its whole structure by vessels appropriated to that purpose, under various changes in its progress, and forming certain secretions, some of which serve important purposes in the economy of the plant, while others are thrown off as noxious and detrimental. In this mode the plant lives and grows; and when these various functions cease, it is said to die. So, also, does it hold with the animal creation: the animal takes in matter for its nutrition and growth; it circulates these, which, after undergoing certain changes from exposure to the air, produce the different secretions of the animal system, part of which are subservient to secondary purposes in the economy of the organization, while others are thrown off as useless and injurious.

But the animal so described is a mere form of existence, differing in no respect from the plant; the functions which it has hitherto exercised being purely organic, and common to it and the lowest form of vegetable existence. In animals, therefore, we have further the animal functions, properly so named in contradistinction to the organic, or vegetative functions. These animal characteristics are the powers of locomotion, sensation, voice, and the wonderful, I would say almost mysterious, group of functions, or faculties, which we express by the word MIND. All these are peculiar to animals, and are most distinctly developed in the higher forms of animal organization; and all of them—however wonderful they may seem—rest primarily

* The term *life* has been commonly used with the utmost vagueness, and any attempt to explain its nature has been, in general, regarded as hopeless in the extreme. Authors on this subject may be divided into two great classes: First, those who consider life to be a subtle substance—a real and distinct agent—attached to certain forms of matter, and the *cause* of the remarkable phenomena which these display. Second, those who regard it as merely a certain mode of being, *consisting in* these associated phenomena and the *result of* certain combinations of matter placed under peculiar circumstances.

on the organic. They are never seen without the organic; they are formed posterior to their development, and they usually precede them in the process of dissolution.

The animal functions have also been named functions of relation, from each and all of them having a distinct relation to the external world.

The organic functions, to which alone attention will now be directed, are those of digestion or assimilation, circulation and respiration. These are essential to life; health depends upon the integrity of their action; and each I propose briefly to describe.

CHAPTER V.

DIGESTION.

All organic substances possess the power of taking from the external world certain solid and liquid matters, which assimilate to their own nature, and thus repair the waste they are continually undergoing. It is to this renewal of their blood from without that digestion is instrumental. If we follow the food from the mouth to its incorporation with the previously existing tissues of the body, the waste of which it is its office to supply, we shall gain a sufficient knowledge of the function of digestion, and see how important to the preservance of health is the integrity of its operations.

The food reduced to a pulp by the movements of the teeth and the admixture of the saliva secreted by the salivary glands, is swallowed by a somewhat complex muscular action. It is moved about in the stomach by the contraction of muscular fibres; and, being there mixed with the gastric juice, a peculiar fluid secreted by the lining membrane of the stomach, it is called chyme: this chyme is then, in successive portions, transmitted, by muscular contraction, into the highest part of the intestinal tube, termed the duodenum, which is a kind of second stomach, where the partially assimilated food is first mixed with the bile, and then with the secretion derived from the sweetbread, or pancreas. From this mass a whitish fluid—the chyle—for the immediate nourishment of the blood, is now extracted by the absorbent vessels, termed lacteals, the extremities of which abut on the lining membrane of the higher parts of the intestinal

tube, while the residue, or excrementitious portion, is sent downwards by what is termed the peristaltic action of the tube, for evacuation. The chyle, taken up on a very wonderful plan by the lacteal tubes, is transmitted through small organs termed mesenteric glands, whence, after important changes, it is again collected by what are named the efferent lacteal tubes; these by degrees unite together into a trunk, to form the thoracic duct which, commencing in the abdomen, passes through the chest, and terminates at the point of junction of the internal jugular and subclavian veins on the left side of the neck, and into which it pours its contents. The chyle, being thus [mixed with the venous blood, is carried with it to the right side of the heart; and, by the motion of the heart, is thoroughly mingled with that blood which now, reinforced by the chyle, is transmitted to the lungs, where, by exposure to the air, the venous blood is converted into arterial; the arterial blood, so rendered fit for the nutrition of the body, being sent forth from the left side of the heart, is conveyed by the great arterial trunk, and its branches, to the capillary blood-vessels, which pervade all the sensible parts of the body. From these capillary blood-vessels, the several component textures of the living frame attract the new matter, of which they stand in need; while that which is already reduced to the state of debris, re-enters the blood of the capillary system, and returns with the blood, now become venous, to the right side of the heart. The blood, having become impure by the admixture of the debris of the tissues, and from other causes, is purified, partly by the lungs, by which a superfluity of carbon is thrown off, while, by the slow combustion which it sustains, animal heat is developed; and partly by the kidney, of which last organ the particular office plainly is to keep the blood free from the various chemical products generated during the successive decompositions which the textures and their first debris undergo.

Such, then, is a brief sketch of those wonderful processes of assimilation by which food is appropriated and transformed into substances necessary to existence. It is most complex; but still upon the integrity of its operations health depends. In unity, all must act together—all blend in harmonious concord; and, like the wheels, and springs, and pivots of a watch, the imperfect action of any part may disarrange the whole. The machinery may be entirely stopped, or it may work so imperfectly as to be comparatively useless. Upon the function of digestion depends almost entirely the maintenance of the vegetative life of the individual; and we need not wonder at the

great importance which, in all ages, has been assigned to it, when we consider the principal circumstances necessary for the healthy condition of the process:—1. A healthy state of the mouth, its teeth, and salivary glands. 2. A healthy state of the stomach, as regards its muscular action, and its fluids. 3. A healthy state of the fluids, derived from the liver, pancreas, spleen, and mucous membrane of the intestines. 4. A healthy state of the mucous membrane of the stomach and of the intestines; and 5. A healthy state and consecutive and harmonious action of the muscular coat of the intestines. Can we, then, be surprised that "indigestion is the prevailing malady of civilised life, and that physicians are more often consulted about the disorders that belong to eating and drinking than about any others?"

From the foregoing brief sketch of the assimilative functions, important corollaries arise with regard to taking food, so as to secure healthy digestion. To persons in health, it may appear needless to insist upon such particulars; but even they cannot, for any length of time, without suffering, neglect the laws which regulate healthy digestion. The infringement of the laws which secure health to any part of the body, reacts upon the whole; and an especial reason why the organs of digestion should be kept in a state of most perfect integrity is, that they have to prepare the materials, as we have seen, out of which the whole body is formed. Many persons lay the foundation of irretrievable disease, by neglecting the first warning of painful or disturbed digestion; while the tone and vigour which is given to the system by digestive organs, kept in health by wise regulations, is sure to lead to a hale and vigorous old age. The chief of these observances I shall lay before the reader.

And, first, as to variety in diet. Man is an omnivorous animal, and formed to feed not only on animal but on vegetable food. Without injurious results, he can confine his diet neither to the one nor to the other. We may thwart our propensities, it is true, and we may neither eat when we are hungry, or drink when we are thirsty; or we may feed exclusively on herbs and fruits, and on water from the spring, or be satisfied with the least possible quantity of the simplest possible fare; but there are few who have thus endeavoured to supersede their instinctive and wholesome impulses, who have not found themselves the worse for their pains. Again, among those who are kept for a long time on the same diet—as sailors at sea, or persons in a besieged town—a disease called scurvy is very common; not, as is generally supposed, from the use of salted food, but from

the inadequacy of *any* kind of food, if long persevered in, to support the vital powers. A melancholy proof of this is found in the experiments made upon himself by Dr. Stark, of Vienna, who, having made several unsuccessful attempts to live exclusively upon one food, died at last upon Cheshire cheese. It is indifferent how abundant, and, abstractedly considered, how nutritious food is; the individual will perish, in fact die of starvation, who feeds without variety; for food, when uniformly of the same character, ceases, after a time, to communicate any stimulus. Thus we see the impropriety of giving to convalescents and others, whose digestive powers are impaired, arrow-root, sago, tapioca, jellies, eggs, and so forth, consisting, as they do, of comparatively simple and highly concentrated matters. Many would recover on hung beef, grated on bread and butter, or on the flesh of "a tough old cock, boiled to rags"—a favourite prescription of the late Dr. Willan—who perish on veal and chicken broth, and other slip-slop appurtenances of a sick-room; and for an obvious reason. The remarks of Dr. Latham (*On the Diseases of the Penitentiary*), of Dr. Paris (*On Diet*), and Dr. Prout (*Bridgewater Treatise*), together with the experiments of Magendie, Raspail, Edwards, Balzac, and others, upon the properties of highly concentrated aliments, tend to the same conclusions.

Having said thus much with regard to variety of food, let us now consider the mode and time of eating.

In the first place, food should be properly cooked. Many substances which are very indigestible when in the raw state, are rendered perfectly digestible by cooking. Although the stomach is capable of digesting fruits and some kinds of seeds without any exposure to heat, yet as a rule the breaking down of the tissues which occurs in cooking greatly facilitates the digestion of both animal and vegetable food. But while that cooking is proper which enables the stomach more easily to reduce the food to the condition of chyle, there are extremes of preparation which, however palatable, are to be avoided. Food that is much prepared, so as to reduce it to a fluid condition,—as soups, stews, and various made dishes, do not present sufficient solid matter for the healthy process of digestion to be carried on. When the object is to prevent the stomach from doing duty, such food is proper. It may also be taken occasionally with advantage as a variety in diet, but food taken long together in this form is injurious.

Much indigestible food at a time should be avoided. Many of the articles of our diet are less digestible than others, and when taken

in small quantities are not injurious. It is when such substances are made the principal constituents of a meal that danger is likely to arise. To mention only a few of the less digestible kinds of food:—Unfermented bread and biscuits, uncooked vegetables eaten as salad, unripe fruits, cheese, pie-crust, fat meats smoked as bacon, and the fat of meat, some kinds of fishes, prawns, crabs, lobsters, &c. Heavy meals of any one of these articles of diet, or mixtures of them, may be very injurious, and produce serious attacks of indigestion, if not other more serious diseases.

Solid food should be well masticated before it is swallowed. The teeth are organs given us on purpose to perform this function, and its accomplishment should be attended with the mixture of saliva with the food, which is an important step in the process of digestion. Although by hasty mastication persons in business hope to save time, they should know that at least this is a loss of food, if not immediately a loss of health. Much more food is digested when it is well masticated, than when it is swallowed very hastily in large masses. Food that is imperfectly masticated is digested with difficulty, and remains sometimes so long in the stomach as to produce irritation of that organ; it also putrefies, causes pain, and taints the breath.

Even where mastication is very complete, it is always better to swallow slowly, as by this means every part of the food is brought more fully under the influence of the gastric juice of the stomach, by which it is prepared for absorption into the blood.

Full and heavy meals should be avoided. It is better to get up from table with an appetite, than to feel that no more food could be taken. It is always difficult to say how much should be with propriety taken. Some systems will *bear* twice as much food as others, while there are those who *require* twice as much food as others. Scales and weights are dangerous instruments at table, as some men will starve upon what others will thrive. There is an instinct which cries, "Hold, enough!" and if men would listen to its warnings, it would always guide them right. The feeling after eating should be one of refreshment and comfort—feelings that are not present when too large a meal has been eaten. Habitual stuffing is as great an evil as habitual drinking. Both should be avoided. All food taken into the system, and not wanted, is likely to be in the way; and the processes adopted by nature for getting rid of the incubus, are not unfrequently attended by disease and death.

Persons who habitually over-eat, are frequently obliged to have

recourse to medicines to correct the errors of their indulgence. Such an unnatural way of correcting the evils of an unnatural habit, is itself likely to produce disease in the system. The pithy answer of a celebrated surgeon to a panting alderman, "Live upon sixpence a-day, and earn it," is worthy the consideration of those who eat too much.

Active bodily exertion should not be taken immediately after the principal meal. The stomach requires a supply of blood to perform its functions. If the current is diverted to other organs, digestion is prevented. On this account reading at meals is an objectionable practice. The brain in this process receives the blood which the stomach requires. Long walks and hard study should both be avoided after a full meal.

Long fasting is bad. It is bad when the body is at rest; it is much worse when the body is actively engaged. The stomach, like all other organs, performs its functions by virtue of the stimulus afforded it by the blood. If the blood is allowed long to circulate without a renewal of its constituents, it no longer supplies the nervous system with energy; the stomach and even other organs flag in the performance of their duty, and, as a consequence, digestion is imperfectly performed. How often should man eat in the day? In the morning, at noon, and at night, is the answer given by the instincts of man. But how many try to reduce these three periods to two? Breakfast in the morning, a biscuit at noon, and dinner at night, is the plan adopted to save the necessity of eating in the middle of the day. This is the custom of clerks, merchants, professional men, and many tradesmen. The working man is spared this trial of strength. He works with the arm, and must be fed. He dines in the middle of the day. It is not till the clerk, merchant, and others, follow this example, and eat a good meal—call it lunch or dinner—in the middle of the day, that we shall cease to hear of terrible examples of the destructiveness to health by their present system.

The body can go longer without food while sleeping than when awake; hence persons may with safety fast during a longer number of hours between the night and morning meals, than between the morning and noon, or the noon and night meals.

There are no rules without exceptions in certain cases, and there are many circumstances which must modify the application of the foregoing rules, as well as in other ways regulate the taking of food.

Age is a perpetually modifying influence. The new-born infant

requires every hour or two the food which nature has provided for its use. As it grows older, the intervals at which it takes its food become longer; but it should be always recollected that, as a rule, children should eat oftener than adults. Grown-up people are too apt to assume that what is good for themselves is good for children; hence as great an amount of suffering is entailed on children by restricting the quantity and times of taking food among the rich, as is inflicted upon them by absolute want of food among the poor. The craving appetite of children is caused by the incessant demands of an ever wasting, yet ever growing, human body. Bread and butter, or common cake, should always be allowed, if asked for by rapidly-growing boys and girls, between the hours which are found convenient for their meals. An evil, however, arising out of the healthy appetite of youth should be guarded against; it is, that while growing, a habit is acquired of eating larger quantities of food than are required when growth has ceased. If the appetite is not checked by reason at this period of life, the habit of eating more than is necessary may be productive of evil results.

Old age, as well as infancy, requires a frequent supply of food. "A little and often" is a maxim that enables many an aged person to live in health; while an attempt, at sixty, to maintain the habits of youth and middle age has cost many their lives.

The mode of life influences the diet. The sedentary and inactive do not consume so much muscle and nerve in their existence as the active and laborious, and accordingly require less food. The tailor cannot eat as much as the day labourer; and the lady, all day in her drawing-room or carriage, cannot expect the appetite or the enjoyment of food which is bestowed by the laws of nature on her housemaid; while the quantity of food a man may devour, without inconvenience, at a dinner taken in company, in the midst of inflated speeches, songs, and so forth, is sometimes such as, had he taken it, without condiments, in his own solitary apartment, would have almost annihilated him. Climate, too, has great influence upon the quantity of food a person consumes. Thus savage and semi-savage tribes—as the Norwegians and other inhabitants of the north—are characterised by their ravenous and indiscriminate appetites. A Yakouti or Tongousi will eat forty pounds of meat in the day; and three of them will finish a rein-deer at a meal. One Yakouti, attached to the suite of Admiral Saritcheff, is said to have been accustomed to consume daily the hind quarter of an ox, twenty pounds of fat, and a

proportionate quantity of melted butter for drink! And among civilised nations, also, more food is required in winter than in summer, more in cold climates than in hot ones. In both these cases the excess arises from the greater consumption of certain parts of the food in maintaining the animal heat, in order to keep off the external cold. Hence, to bring the appetite of Christmas to the Midsummer meal, is to run the hazard of a surfeit; while the traveller who carries the eating habits of the North to countries under the line, frequently perishes of fever brought on by repletion.—(*Family Friend.*)

I cannot leave this portion of my subject without a few words of caution to many of those who are, I doubt not, among my readers. I allude to the charitable, and those whose delight is found "in doing good, morning, and noon, and eve;" and to the scientific medical man it is melancholy to see how often, in the eagerness of impulse to apply relief to the poor and starving, as such persons often display, the proper mode of doing so is totally disregarded. It is a great mistake to effect a sudden change from a deficient and unwholesome diet to a full supply of nutritious food. Any general and sudden change from habitual diet, even to a better, proves unwholesome, and renders the human frame more susceptible to disease. There can be no difficulty in applying these remarks; but still I may give examples. Thus Dr. Graves relates, that during the epidemic in Cork it was necessary to form an encampment for the troops, as the recruits, who joined half-famished, suffered much, and fell into bad health from change of diet. From a somewhat similar cause, some years ago, one of the finest regiments in Sweden, consisting of Dalecarlians, lost nearly half its men. Having been ordered to the capital from their own district, the sudden change of diet, from their accustomed black bread and pease to the better and more nutritious food of Stockholm, so completely undermined their health, that, to save the few who escaped disease, their usual food was restored to them. If further proof were necessary, I would appeal to the experience of every mistress of a household who has received as a servant one belonging to a very poor family. We almost invariably find that sickness, and that sometimes of a serious character, follows the sudden change of food, and that some time elapses before the system is habituated to the new circumstances of the individual.

CHAPTER VI.

THE HEART AND THE CIRCULATION OF THE BLOOD.

Two hundred years ago, the circulation of the blood was discovered by our countryman HARVEY. It is the grand function by which the blood is distributed throughout the whole body, mixed with the assimilated food for nourishment and growth, and purified by being brought into contact with the air. These important operations are performed by the action of the heart and the vessels connected with it, whether intended to carry the blood from it—as is the office of the *arteries*—or to return to it by the *veins*.

It is peculiarly worthy of notice, that the arteries are all deeply seated, protected by muscles and soft parts, and frequently under cover of bones. But the veins, which are more capacious, are usually superficial, and not protected in the same manner as the arteries. This beautiful but simple provision of nature is to prevent the great danger, and often fatal effects, which would ensue from injury of the arteries, were they exposed in the same manner as the veins. The wound of an artery usually terminates fatally, if not speedily attended to; but wounds of veins are attended with comparatively little danger.

It would be foreign to my purpose to enter into an anatomical description of the heart. Suffice it, then, to say that it is double, as well in structure as in function—the right compartment being constantly and exclusively pulmonary, and the left equally constantly and exclusively systematic. Though these two compartments are united into one heart, and placed on one side of the body, they would have performed their distinct offices perhaps equally well, had they been quite separate from each other, and placed one on one side of the body, and the other on the other.

The magnitude of the human heart averages that of a closed fist. It is a hollow muscle, characterised by the unremitting series of alternate contractions and relaxations which it exhibits during life; the impulse produced by which gives the phenomena of the arterial pulse. The frequency of these contractions has, ever since the discovery of the circulation, been regarded by medical men as a criterion of the state of the health. In the calm, undisturbed state of the body in the adult, they are estimated at about 70 in the minute; while, when disease is present, the frequency of the pulse is sometimes fully double—or at least 120. It is not often that it falls below the healthy standard

of 70; such cases being rare, indeed, compared with those in which it is more frequent than natural, as happens so commonly in inflammatory diseases, fevers, rheumatism, &c. It is generally somewhat quicker in the female than in the male, and is always more rapid in early life than in advanced age. In the newly-born infant it is about 140. In extreme old age it falls to 60—not unoften to 40; and I have heard of one case where it was so low as 28! The indications of the pulse are of the highest importance; and any increase beyond the standard of health, except after violent exercise, is a never failing sign of the presence of disease.

The force with which the heart acts has been reckoned equivalent to 51 pounds on the square inch; and the amount of blood propelled at each pulsation is believed to be between two and three ounces. If, then, we assume the whole amount of blood in the human body at 30 pounds—which is admitted to be pretty near the truth—the total quantity of blood will circulate 20 times through the body in the course of an hour, or 480 times in a day and a night; or the whole blood returns once to the heart every three minutes.

Of this most wonderful organ, that never sleeps, it may be truly said:—

> "By ceaseless action all that is subsists,
> Constant rotation of the unwearied wheel
> That Nature rides upon, maintains her health,
> Her beauty, her fertility. She dreads
> An instant's pause, and lives but while she moves."

Incessant, however, though the heart appears to be in its action, there is a pause after each pulsation; and by carefully attending to its duration we find it continues about the fourth portion of the time from the cessation of one impulse to the return of the succeeding; so that, unremitting as the action of the heart seems to be, there is, nevertheless, an amount of pause or rest, equal to six hours out of the twenty-four.

The discovery of the circulation of the blood formed an important era in medicine. Harvey was led to it, not by mere random guessing, but simply by examining carefully the heart itself. And that there is a circulation of the blood, is easily proved by placing a ribbon on the arm, and rolling it somewhat tightly round, immediately above the elbow. It will almost instantly be seen that a great tumefaction occurs in the blood-vessels of the part, which become highly prominent and distinct beneath the ribbon, while those above it become flaccid and empty. This is done every day, in the common operation

of bleeding. By the pressure of the ribbon, the return of the blood to the heart is impeded, while its accumulation is prevented by the opening made in the vein by which it escapes. In the same manner, if we inject any matter, which we know can be detected in the blood, into a vein—as into the jugular vein of the neck—it can be discovered, within a few minutes, in a very remote vein; as, for instance, in the blood of the vein of the leg, which otherwise could not have taken place, unless it had been first conveyed to the heart, and thence circulated through the body, from which it would finally be returned by the veins of the extremities.

I may further add, that the circulation of the blood may be actually seen, by exposing the hearts of certain animals—the frog, for instance. Moreover, there are various dispositions and internal arrangements in the animal structure, for preventing undue accumulations of blood in various parts of the body, which would not have been, unless there had also been a circulation of the blood.

CHAPTER VII.

RESPIRATION—THE LUNGS—THE AIR.

MAN is not the independent being he is apt, in the flush of his youth, and in the pride of life, to conceive himself. His is not an isolated existence on the brute earth, or the adamantine rock. His existence is one series of internal actions, by which his frame is preserved from dissolution, and an unceasing interchange with the elements of the atmosphere in which he lives and has his being. Though he bestride the earth in "beautiful disdain," his very life depends on the inspiration of the common air; and on its withdrawal from him but for a few seconds, he passes away fleeter than the shadow of a summer cloud.

The function of the lungs, or respiration, which I now propose briefly to describe, is considered, with that of the heart, as a vital function; not that the other functions of the living body are not all entitled to the name of vital, but because they are particularly so, since if their action be suspended beyond two or three minutes, death is the result. This function, carried on by all animals, and even in the vegetable creation, induces changes in the surrounding atmo-

sphere subservient to a most important function in the great laboratory of nature.

As animals differ very much from each other in character, form, and the element they inhabit, or are destined to live in, so the character or form of that portion of their structure, by which they act on the air, presents great varieties. In some of the lowest forms of animals, respiration is carried on by pores diffused over the whole body. In those of a higher type of organization, the respiratory function is carried on by a particular organ, denominated the lungs, which structure in man, and the whole class of mammalia to which he belongs, occupies the upper part of the body, in common parlance named the chest. It constitutes fully one-third of the whole trunk, having the heart placed in the middle. The lungs communicate with the trachea or windpipe, distinctly to be felt in the lower part of the neck, where it opens into the mouth immediately behind the tongue. By means of the mouth, then, and also by means of the nostrils, which communicate with the mouth, the air has constant access to the lungs and their ultimate air-cells, where it meets the blood, conveyed there from all parts of the body, to be purified and fitted for its especial purposes.

These air-cells constitute the ultimate division of the air-tubes—themselves a division of the trachea or windpipe. They are very small; their diameter being computed to be about the hundreth part of an inch. They are lined by a membrane, which is a continuation of that which lines the throat and mouth, and is reflected over the lips. This secretes a mucous fluid, and hence the membrane is called mucous membrane. The quantity of this mucus is considerably increased in colds and coughs, while its quality is much changed in inflammatory affections of the various parts to which it is attached.

As the function, then, of the heart is to transmit incessantly to the body a supply of nutritious blood, so that of the lungs is to purge the blood of its impurities by an equally incessant exposure of that blood to the influence of the atmospheric air.

Respiration comprises two distinct and separate actions, and those chiefly effected by the muscles of the chest: *inspiration*, or the introduction of air into the lungs; and *expiration*, or the return or expulsion of the air from the lungs. It is essential to life; and there is a great general relation between the frequency of the pulse and the frequency of the respiratory movements. When the pulse beats at the ordinary standard in the adult, there are usually two respirations for every seven pulsations. Any variation from this standard may

reasonably, except in violent exercise, justify the suspicion of incipient ill health. A man in perfect health should *not feel* that he is breathing.

But I must now, in order to make myself perfectly understood, make a few remarks upon the chemical nature of the atmosphere; and first I must premise, that the atmospheric air, on which we every moment depend for life itself, is not a simple or elementary body, as was, until within the last eighty years, the general belief of mankind. It consists of different matters; and these, for the sake of convenience, I shall arrange under three heads:—

1.—Those matters which constitute the great bulk of the air.

2.—Those substances which are always found in it, but in a definite, though comparatively small, proportion.

3.—Those other bodies which are detected in it, but in indefinite quantities, and often only under certain peculiarities of locality.

First, then, the great bulk of the air is composed of nitrogen (called also azote, by many) and oxygen. The proportion is four volumes, or measures, of nitrogen, and one volume, or measure, of oxygen. These proportions are found in every quarter of the globe, whatever the character of the locality may be, and at whatever elevation the air may be examined. The nitrogen seems to have no active property. It apparently dilutes the other gas, and renders it less stimulant; but, by itself, it can neither support combustion nor respiration. A lighted taper, introduced into a jar containing it, is immediately extinguished; and it is equally fatal to animal life. The oxygen gas, which constitutes the fifth part of the whole bulk of the atmosphere, is the active element. It is the great supporter of combustion, and the essential element which affects the blood during the process of respiration. Exposed to its action in the cells of the lungs, the dark hue of the venous blood is converted into a brilliant red.

Secondly, carbonic-acid gas and watery vapour are matters invariably present in the atmosphere, though comparatively in a small quantity; the former scarcely exceeds one-thousandth part of the whole atmosphere, and the range of the latter is greatly determined by the temperature. To these the researches of Liebig, a celebrated German chemist, have added a third substance, in the form of ammonia, evidently arising from the decomposition of animal matter. The quantity of this is altogether infinitesimal, but still of sufficient importance to be taken into account in the almost unbounded volume of the air.

Thirdly, the other matters are various gases arising from the decomposition of animal and vegetable substances, resulting either naturally or artificially. An instance of the former is presented to us in the vast accumulation of carbonic-acid gas in the Valley of Death at Java; and of the latter, in the production of the same deadly gas by the process of fermentation in a brewer's vat. We also find other gases, as sulphuretted and carburetted hydrogen, in the air.

In the function of respiration, about 20 cubic inches of air are inspired, and about the same amount of air is expired; and, if we estimate the number of respirations in the minute at 16 (some make them 20), nearly 20,000 cubic inches pass through the lungs in an hour; or, 266⅔ cubic feet are transmitted through that organ in the course of twenty-four hours.

Now, if for the sake of simplicity my readers will assume the amount of air taken into the lungs at each inspiration to be fifteen cubic inches, they will be more easily enabled to understand what is to follow. The air, then, consists of 12 cubic inches of nitrogen, and 3 cubic inches of oxygen—omitting the fractional portion of the carbonic-acid gas always present in the atmosphere. On its being returned, or expired, the quantity of nitrogen remains unchanged; the quantity of oxygen, however, has been altered, for now there are only two cubic inches of it, the remaining being entirely composed of carbonic-acid gas—a deadly air, when unmixed, and instantly fatal to combustion and to animal life.

It had been observed by chemists, that when carbon—that is, charcoal—is consumed in the air, or in pure oxygen gas, carbonic-acid gas was produced by the carbon uniting with the oxygen, and that there was no increase or decrease of volume during the process; the space occupied by the carbonic-acid gas being exactly the same as previously occupied by the oxygen. The application was accordingly made by Crawford to the philosophy of the process of respiration, and the lungs were supposed to be the organ where the carbon, which predominates in black and venous blood, meets with the oxygen of the atmosphere, and, combining with it chemically, is separated from the system, while, at the same time, it serves the important secondary purpose of maintaining the high temperature of the animal body; for the warmth of the body is always, in temperate regions, some forty or fifty degrees above that of the atmosphere.

This subject is, perhaps, one of the most interesting in the history of the economy of the human organization; and the rather, as we

possess some tangible and ponderable facts on which to build an hypothesis. Suffice it now to say, that it is believed by most philosophers to be the grand source of animal heat, and that the action of the air in the lungs is merely a modified process of combustion; the elements between which the action takes place—the oxygen of the air and the carbon of the blood—are the same; the generation of heat and its products—the formation of carbonic-acid gas—are the same.

This, although not the only function of the lungs, is the most important, and the most intimately related with the life of the body; for, whatever causes prevent the access of the air to the blood, they sooner or later tend to the destruction of life. The importance of the application of this knowledge to the principles of public health does not require any additional notice. Reflection on subjects of this nature cannot but tend to elevate the mind, and raise it to a fervent, however feeble, appreciation of the greatness of that Power, by which the whole fabric of nature is sustained, and of which we can only express ourselves truly when we say—

> "All we behold is miracle, but
> Daily seen, is miracle in vain!"

Before passing to the immediate subject-matter of this work, there is another function upon which I must add a few remarks.

CHAPTER VIII.

THE SKIN.

The function of secretion, by virtue of which different kinds of matter are being constantly thrown off from the blood, distinct from it, and differing from each other, is a process incessantly carried on in the living body, for the healthy condition of which it is no less essential than is the action of the heart or of the lungs. It is effected by means of glands and other arrangements, but particularly by the former class of organs, as the lachrymal glands, which secrete the tears, the liver, by which the bile is produced, and the kidneys, by which the urine is generated. From a change in the secretion of bile various disorders arise; and a suppression of the secretion of the kidneys, if not speedily relieved, is almost always followed by a fatal

result. The general nature of the secretions of these two glandular bodies, and the important bearing they have on the health of the animal body, are too well known to demand further notice. It may be sufficient to observe, that the various glands in different parts of the body perform functions of an analogous character, though they are not individually so necessary to the well-being of man as those I have just described.

Next in importance to the secretion of the bile and of the urine, is that formed by the skin; a structure which is almost disregarded by the mass of the people in this country, as if it really had no existence, and as if the derangement of it could not in any particular mode seriously affect the life of the individual. More enlightened views are fortunately now diffused among the public; and the institution of baths for the working classes, by means of which the skin may be rendered more healthy in its general functions, cannot but be attended with the highest benefit to the community at large.

In man, as in the vegetable creation, watery vapour is continually passing away from the body, at all those points where the skin is free to act. The quantity that is thus discharged varies much, being regulated greatly by the atmosphere being dry or moist, hot or cold, or calm or agitated with violent winds.

There is further, however, a distinct stratum of glands, situated immediately beneath the skin, abundantly supplied by blood-vessels, and provided with spiral ducts protected by a little valve which the fluid forces open as it passes to the skin. These glands are in constant action; and the fluid which is secreted from them is either insensible or sensible. It is in the former state when it passes off at once in the form of vapour, being dissolved by the air; in the latter, when it assumes the state of sweat or perspiration, as is correctly observed in "Carpenter's Animal Physiology." "These perspiratory glands," says the doctor, "seem to be continually exhaling fluid, which is dissolved by the atmosphere, and carried off in the state of vapour, so as to pass away *insensibly*; but they are stimulated to increased action by exposure of the body to heat, which causes them to pour forth their secretion in greater abundance than the air can carry off, and this constantly accumulates in drops upon the surface of the skin. The amount of perspiration may be considerably increased without its becoming sensible, if the air be warm and dry, and is thus able to carry off, in the form of vapour, the fluid which is poured out on the skin; but, on the other hand, a very slight increase in the ordinary amount becomes immediately sensible on a damp day; the air being

already too much loaded with moisture to carry off the additional quantity. The distinction between insensible and sensible perspiration is not the same, therefore, with the difference between simple evaporation and exhalation from the skin; for a part of the latter is commonly insensible, and the degree in which it is so depends upon the amount of fluid exhaled, and the state of the surrounding atmosphere. If the fluid thus poured forth be allowed to remain upon the surface of the skin, it produces a very oppressive effect. Most persons have experienced this, when walking in a Macintosh cloak or coat on a damp day. The waterproof garment keeps *in* the perspiration almost as effectually as it keeps *out* the rain; and consequently the air within it becomes loaded with fluid, and the skin remains in a most uncomfortable as well as prejudicial state of dampness."

The quantity of fluid which passes off from the skin ranges between two and three pounds in the course of twenty-four hours. If we take the vapour thrown off from the lungs as well as the skin, the greatest amount observed was five pounds, and the smallest one pound and two-thirds.

It is not pure water which escapes in this manner; there are certain salts discharged with it, and a distinct proportion, though small, of solid animal matter.

The hydropathic system, or water cure, of which we occasionally hear so much, is merely the adaptation of certain means to augment greatly the amount of this function of the skin, and make it the outlet for various noxious matters, which, accumulating in the blood, produce certain diseases, as gout, for example. I am not disposed to look so unfavourably on the water-cure as some of my medical brethren; but applied indiscriminately, as is too often the case, under the direction of needy adventurers, and rash, uneducated men, I apprehend that it is not unfrequently the certain cause of death. One great advantage it certainly possesses —one decidedly good effect it does produce, when it secures a most thorough cleansing of the emunctories of the skin, which are so apt to be neglected, even among the middle and higher ranks of society.

It is believed that, through the influence of this evaporation from the surface of the body, man is enabled to resist, without injury, the effects of very high temperatures. The temperature of the human body is about 97° of Fahrenheit; but Sir William Blagden and Dr. Fordyce went into rooms heated to 260°—that is considerably above the boiling point of water—without experiencing much inconvenience. The notorious Chabert (so well known as the Fire King) has entered

ovens heated as high as 500°. Similar feats are often witnessed in iron foundries, and I am quite satisfied that there is no deception practised in such apparently dangerous exploits. The rationale is, that the heat becomes latent as the moisture of the skin passes off into vapour, and thus a cool atmosphere is maintained, isolated even in the midst of the burning fiery furnace.

But another and very important function appertains to the skin. Nature is a judicious economist, and has provided more than one exit from the body for the refuse food. We have already seen how the separated chyle is mixed with the blood, purified in the lungs, and adapted for the repair of the general system; and we know full well how considerable are the inconveniences and dangers which follow the non-evacuation of the excrementitious matters which collect in the reservoirs appointed for their reception. It was not enough that nutritive juices should be assimilated in the digestive organs, and animalised in the lungs. It was necessary to provide for throwing off from the body such introduced matters as are either useless or injurious; and it is in a great degree through the skin, and in the form of perspiration, that products which may possess or acquire noxious properties are thrown off from the blood.

Although apparently very simple in its structure, the skin is nevertheless a very compound organ; and when we consider the important functions it performs, and its relations to the rest of the body, we shall not be surprised at this. It is not only the chief seat of sensation, but, as we have seen, by means of the vapour constantly emitted in the form of perspiration it becomes the great regulator of the heat of the body. For these purposes it is largely supplied with nerves, blood-vessels, glands, and pores. Now if these pores be obstructed, and the transpiration checked, the constituents of the transpired fluids will necessarily be thrown upon the system; and as they are injurious, and even poisonous, if retained, they must be removed by other organs than the skin. Those organs are the lungs, the kidneys, the liver, and the bowels. But it will be apparent to every one, that if these organs, equally, or one more than another, which is generally the case, be called upon to perform their own office as well as that of another, the equilibrium of health must be disturbed —the oppressed organ must suffer from exhaustion and fatigue, and become diseased. Thus habits of uncleanliness become the cause of consumption, and other serious affections of vital organs. Again: if the pores be obstructed, subsidiary respiration through the skin will be at an end; and, as a consequence, the blood, deprived of this source

of its oxygen, and one outlet for its carbon, the chemical changes of nutrition will be insufficient, and the animal temperature lowered. As a consequence of the second position, cutaneous eruptions and diseases will be engendered, the effects of cold manifested on the system, and the re-absorption of matters once separated from the body, will be the exciting cause of other injurious disorders. The third position offers results even more serious than those which precede. If a pellicle of foreign substance be permitted to form on the skin, this will inevitably become the seat of detention of miasmata and infectious vapours. They will rest here previously to being absorbed, and their absorption will engender the diseases of which they are the peculiar ferment.—(*Wilson on Healthy Skin.*) But enough has been said to enforce upon the reader the necessity of ablution, and strict attention to its observance.

CHAPTER IX.

CONTAGION AND INFECTION.

Before I commence the immediate subject of this work—for which the reader is now prepared—it is necessary to explain the terms Contagion and Infection.

If a person who has never had small-pox, and never been vaccinated, stands near to one affected with small-pox, about a fortnight afterwards he himself may begin to suffer from the same disease. Under these circumstances we say the person caught the disease. Diseases which spread in this way, from individual to individual, are said to be infectious. The person who thus catches a disease must receive the germ of it through the air; for he does not come into contact with him from whom he catches it; nor does he come into contact with any matter appreciable by our senses emanating from the sick man. The chemist may analyse the air the small-pox patient has breathed, but he will detect no difference between it and that which has been breathed by the most healthy; and the microscopist can discover, by his highest power lenses, no abnormal particle in it. That the atmosphere around a small-pox patient is poisoned, so to say, is known only because those who enter that atmosphere suffer from small-pox, and that direct exposure to the emanations of the sick is not essential to the spread of infectious diseases. If a piece of any porous substance—for example, flannel—be hung

near to a person affected with small-pox, and then be carried to a distance, it may convey to those who have never been near the patient the germs of the disease in question. Objects thus impregnated with the poison of infectious diseases are called *fomites;* the best mode of disinfecting these objects is to submit them to a high temperature, or to expose them for some time to the open air, that is, to freely ventilate them. If clothes which a person suffering from the most infectious disease has worn be boiled, they become innocuous.

If some of the pus, or matter, as it is popularly called, taken directly from a small-pox pustule, be placed under the skin of a healthy individual, who has never had small-pox, nor been vaccinated, within a given number of days subsequently to this innoculation, as it is termed, he suffers from small-pox.

If a portion of a scab from the head of a child affected with ringworm, be bound on the head of an apparently healthy individual, he too may, within a certain time, be found to be suffering from ringworm.

Diseases which are thus able to be propagated by matter appreciable to the eye, are called contagious. The matter placed on, or introduced into, the previously healthy individual in these cases, leads to the formation, in or on him, of a large quantity of matter, possessing the same properties as that which was introduced into, or placed upon him. It is as though a seed were sown, which, after a while, produced a multitude of seeds identical in kind with itself. The matter from a small-pox pustule has not been shown to differ from the matter obtained from a boil: that it does differ from it, however, is proved by the difference in its effects.

There are some diseases which are clearly contagious, but not infectious. Itch is such a disease. Itch is never communicated except by contact. The symptoms of itch are caused by the presence of a minute insect under the skin; and when a person catches itch, he does so by transferring one or more of these insects from the surface of another to his own skin. Ringworm is caused by a minute vegetable growth on the skin; it is contagious, and passes from one person to another by means of spores or seeds of the plant. Ringworm and itch both spread from diseased to healthy persons by means of peculiar matters appreciable to the eye by the aid of the microscope. They are both contagious, but neither of them is infectious.

Medical men often use the word contagion to signify both infection and contagion; but they rarely, if ever, employ the word infection to signify contagion.

It can be easily understood why those diseases, which are the result of the presence of animal or vegetable parasites, are contagious, and why the same animal, or the same plant, always leads to the development of the same train of symptoms; but it is difficult to comprehend why breathing the air which surrounds a small-pox patient should invariably lead to the development of small-pox in those who breathe it, and to no other affection—why breathing the air which surrounds a scarlet-fever patient should lead to the development of scarlet-fever, and to no other disease. Various hypotheses to account for these singular facts have been propounded, but they are all alike without substantial foundation—"mere baseless fabrics of a vision"—pretty bubbles which learned men have blown to while away their leisure moments. The principal infectious diseases are typhus-fever, typhoid-fever, relapsing-fever, small-pox, chicken-pox, scarlet-fever, measles, erysipelas, plague, cholera, and hooping-cough.

About the infectious nature of the whole of these diseases, with the exception, perhaps, of cholera, of which there is much difference of opinion, no well-informed persons now entertain any doubt. From persons suffering from them, there is an invisible something emitted which is capable of inducing the same disease in a previously healthy individual. But it is not every one who is exposed to the emanations of a small-pox patient, who has small-pox. Two persons go into the room of a person suffering from that disease; both are equally exposed to the emanations from the patient. One of the two has small-pox as a consequence of the exposure; the other escapes, so that a peculiar condition of the recipient of the poison is necessary for the disease to develop itself. He must be in a state of body endemically disposed for disorder. Persons who have once had small-pox, although they are ever so much exposed to the poisonous emanations of small-pox patients, do not again have the disease; that being wanting in them which is essential to the development of the disease. A person suffers from typhus-fever in an ill-ventilated, badly-drained, and over-crowded house, and almost every other inmate of that house suffers from the disease. A person suffers from typhus-fever in a well-ventilated, well-drained, and thinly-inhabited house, and no one catches the disease. In the latter case the poison is feeble in power, or it is diluted greatly as soon as it is formed; in the former it is intensified by external hygienic conditions. Yellow-fever poison is destroyed by a moderately low temperature. Certain conditions of the atmosphere, the nature of which is unknown, favour the spread of these infectious diseases. Sometimes it

is scarlet-fever which prevails extensively, at others small-pox, measles, or typhus, without the physician being able to say why the one or the other prevails. These infectious diseases, then, have their origin in emanations from the sick; but these emanations are impotent, unless certain external conditions are present.

These external conditions are—

1st. The state of the system of the recipient of the poison.

2nd. The hygienic conditions in which the patients are placed.

3rd. The state of the atmosphere.

On several of these conditions of development, as they are called, we can exercise considerable influence, and so do much to stay the spread of the infectious fever. Under favourable hygienic conditions typhus and typhoid fevers rarely spread, although both, under other circumstances, are unquestionably infectious.

CHAPTER X.

SPECIFIC BLOOD DISEASES.

The diseases to be described under the head of Specific Blood Diseases have several points in common—they are all of short duration; the patient either dies or recovers within a limited time; they are all infectious; and, in all, the blood is seriously and probably primarily diseased. Hence their general name—Specific, from their cause; and Blood, from the part essentially diseased. The arrangement I have here adopted is a modification of that proposed by Dr. Jenner in a course of lectures, published in the *Medical Times and Gazette*, in 1863.

Typhus-Fever.—Typhus-Fever runs its course in from about fourteen to twenty-one days. It is often a disease of considerable severity—a large number of persons dying annually from it in all large towns. It is more common in Ireland than in any other country in the world. Its chief ravages in London are committed among those who inhabit the haunts of the lowest class of Irish. It is a disease which would speedily disappear from among us, if sufficient sanitary regulations were duly enforced. The occurrence of true typhus-fever among those who are well-fed, well-lodged, and well-clothed, is exceedingly infrequent. The poor are, in large towns, even when well-fed and well-clothed, rarely well lodged; their

rooms are small, drafty, and yet imperfectly ventilated, and over-crowded. The drainage of such abodes is defective in the highest degree, while the supply of water is totally insufficient for the purposes of cleanliness—to say nothing of its fitness for an article of diet. It seems probable that over-crowding, together with other unfavourable hygienic conditions, is sufficient to generate, *de novo*, the poison of typhus-fever; and that the disease thus generated may subsequently increase in quantity in the human frame, and spread by infection.

The first symptom of typhus-fever is headache, soon followed by feelings of chilliness, languor, weakness, general illness, and loss of appetite. Soon the pulse is quicker than natural, and the temperature of the skin is usually increased. The patient rapidly grows worse; he feels too weak even to sit in a chair, and is therefore, from an early period of the disease, confined to his bed. The tongue is covered with a thick fur, and, when protruded, generally trembles much. All the patient's movements are performed in a tremulous manner. He sleeps but little, or, it may be, is very drowsy, hardly taking any notice of surrounding objects. About the end of the first week a more or less strongly-marked dusky-red eruption appears on the skin. During the second week the mind generally begins to wander. The weakness increases, and at the time the disease reaches its height, during the third week, the patient may be so reduced as to be unable even to turn in his bed. He now lies on his back, mutters deliriously, knowing nothing of what is going on around him. The tongue is dark-brown, or black, and dark crusts collect on the teeth. The patient has to be aroused to take nourishment, or it may be that the attendants have to place it in his mouth, as he lies quite unable to be aroused to make the slightest voluntary effort. The stools are often, at this period of the disease, passed into bed unconsciously, and the urine retained in the bladder. It is important for the attendants on the sick man to know, that, when the bladder is fully distended by urine, a considerable quantity may run into the bed without effort on the part of the patient. Under these circumstances the nurse often misleads the physician, by stating that the patient "passes plenty of water;" the fact being, that all the urine formed, which the bladder cannot hold, runs over into the bed—the bladder itself being all the while immensely distended.

At this stage of the disease, the patient, being very weak, lies constantly on his back in one position; the consequence is, that the lower part of the back is exposed to a considerable amount of continuous

pressure, and not infrequently ulcerates, or even sloughs. In some cases patients have died from this cause, who might otherwise have recovered. In the majority of cases, sores on the back may be prevented by care on the part of the nurse. For this purpose the patient must be kept extremely clean, the back washed frequently, and wet and dirty linen removed *instanter*. The patient, moreover, must have his position changed pretty often—now he may be laid for a while on the one side, now on the other, and then again on the back.

From the first, the linen of a person affected with typhus-fever should be changed, at least once daily; if there is much perspiration, as occasionally happens, the change must be made more frequently. All flannel garments should be taken off. The patient should be washed in warm water morning and evening, and the crusts that collect about the teeth frequently removed. The excretions should be removed from the room the instant they are passed. A small quantity of some deodorizing fluid ought to be put in the close-stool before it is used: a solution of the nitrate of lead is one of the best of these fluids. The room in which a person affected with typhus-fever is placed should be large and well-ventilated; carpets, bed-curtains, and all superfluous clothing and furniture ought to be taken out of it. A well-made hair mattress is far better for him to lie upon than a feather-bed.

The diet at first should be light and unstimulating: a little arrow-root, gruel, and weak broth; subsequently, strong beef-tea, wine, and even brandy, may be required in large quantities.

Aperients are usually needed to ensure free action of the bowels, and remove offending matters—those usually selected are mild alteratives and castor-oil. There are no specifics for typhus-fever, and the consequence is, the medicines required vary with every case. As a rule, persons suffering from typhus require very little medicine of any kind—the physician being needed rather to determine the amount of support, the time when it shall be given, &c., than to write prescriptions; and yet there are no cases which require the close attention of a skilful physician more than those of typhus-fever.

Typhoid-Fever.—This disease is even still confounded by some with typhus-fever; it is, however, a totally different disease, although certain cases of the two may closely resemble each other. Typhoid-fever is very rarely seen in Ireland, and is by no means common in Scotland. It is almost the only kind of continued fever seen in many parts of England, and among the best lodged inhabitants at

the west end of London. The so-called Croydon fever of 1852 is said to have been typhoid-fever. In Paris typhoid-fever is one of the most common diseases, while typhus-fever is there entirely unknown. Large numbers of young persons on first going to reside in large towns suffer from typhoid-fever; persons more than fifty years of age are almost exempt from the disease.

Typhus-fever, as we have said, is now and then generated *de novo*; but what is the exception in reference to that disease is the rule as regards typhoid-fever. Under the ordinary conditions of ventilation and moderate cleanliness it is scarcely infectious. Persons require to be exposed to the emanations of the sick for a considerable time before they take the disease. There is no danger in visiting, for a short time, the sick-room. Many physicians of large experience doubt even if the disease is infectious. The effluvia arising from cesspools and other receptacles of fœcal and decaying animal matter seems to be the most frequent cause of typhoid-fever. Typhoid-fever runs its course in from fourteen to twenty-eight days. It is a disease of considerable danger; and a large number of persons die annually from it in most great cities in England.

The first symptoms of the disease are headache and *malaise*, a sense of great weakness, and diarrhœa, with or without pain in the abdomen. These derangements are sometimes slight, and the sufferer fancies himself far less ill than he really is. As the disease advances the sense of weakness increases, the patient loses his appetite, his skin is hot, there is thirst, the tongue becomes dry, the abdomen distended, the diarrhœa persists. After ten days or a fortnight the headache ceases, and about the same time the patient often wanders in his mind. If the skin be now carefully examined, in a very large number of cases a few bright rose-coloured and slightly-raised minute spots can be seen on the chest and abdomen. When delirium sets in early and is violent, the disease is often called brain-fever. When the weakness is considerable, the delirium moderate in degree, the muscular movements very tremulous, and the patient sleeps but little, it is frequently termed nervous fever. When the heat of skin, the headache, and other symptoms are decidedly more marked at night than day, it is sometimes named remittent fever. This latter is a common type in children. As the disease reaches its height, the prostration may be as great as it is in severe typhus-fever; the patient lies on his back, unconscious of what is going on around him, and of his own sensations; he passes his stools into the bed, and his urine is retained or flows away involuntarily.

Recovery from this state is usually very slowly accomplished. Patients suffering from typhoid-fever occasionally pass a large quantity of blood from the bowels; and this is a symptom indicating much danger.

In rare cases sudden severe pain in the abdomen, with cold surface, small rapid pulse, and other symptoms of collapse, occur. If, as is usually the case, these symptoms depend on perforation of the coats of the intestine from ulceration, the death of the patient is inevitable. Ulceration of the intestine, more or less extensive, is invariably found after death from typhoid-fever.

Although cleanliness and full exposure to fresh air is as essential for the successful treatment of cases of typhoid-fever as of typhus-fever, yet more care must be taken not to expose the patient to draughts of cold air, because in the course of this disease inflammation of various internal organs frequently occurs. In a large proportion of cases, persons suffering from typhoid-fever are better without stimulants of any kind; yet, where the prostration is marked, the free use of wine and brandy may be necessary. When diarrhœa is a prominent symptom, it must be checked by astringents; when blood escapes from the bowels, acetate of lead or gallic acid are ordinarily prescribed. There is no remedy which can cut short a case of typhoid-fever; at the same time, treatment does much to diminish its mortality. The treatment, however, will vary with every case, and call for the exercise, in many cases, of all the skill of the physician. Great care in diet is required during the period of convalescence from typhoid-fever. Abstinence from all indigestible food—as pork in all its various forms, cheese, and pastry—is indispensable for early restoration to health. Serious results even have ensued in cases apparently going on well from errors in this particular.

Relapsing Fever. — This disease commences suddenly with shivering and headache; these are quickly followed by pain in the back and limbs, hot skin, and quick pulse. The tongue is white, the appetite is lost, and vomiting of green fluid is very often present. The patient sleeps but little, and towards night the mind may wander; occasionally he is violently delirious. Jaundice occurs in a considerable proportion of cases.

On about the sixth day of disease a profuse sweat commonly breaks forth, and in from twelve to twenty-four hours the patient appears, and feels, well.

From six to fourteen days after this apparent convalescence, the patient suffers a sudden relapse, again experiencing all the sypmtoms of the primary attack.

In exceptional cases, there is a second and even a third relapse; but still relapsing fever is very rarely fatal.

As regards treatment, no specific is known for the cure of relapsing fever. The patient should be placed in a large, cool, and well-ventilated room, his bed be lightly covered, and all flannel removed from his person. The bowels are to be carefully regulated. A mustard poultice applied to the pit of the stomach sometimes appears to check the vomiting. The diet should be low—gruel, arrow-root, and weak broth. An unlimited supply of cool drink—toast and water, or plain water—should be allowed the patient in this, as in all other febrile affections. During the period of apparent health which intervenes between the primary attack and the relapse, great caution should be exercised in regulating the diet; at this stage of the affection it should be nourishing, but light. It is very rarely that stimulants of any kind are admissible at any stage of relapsing fever.

One attack of relapsing fever does not appear to protect an individual from another attack.

Yellow Fever.—This is a disease unknown in Britain; it is, in fact, an exotic which the temperature of our latitude kills. Persons who imbibed the seeds of the disease in hot climates, may have them developed here, as in the case of those who suffered from yellow fever in the ships arriving at Southampton from the West Indies; but it never spreads by infection in this country. It is, therefore, unnecessary to give any description of the affection.

Remittent Fever and Infantile Remittent Fever are now considered by the best authorities to be identical with typhoid-fever. Some remission or abatement in the severity of the feverish symptoms, towards the middle of the day, takes place in many cases of typhoid-fever. In those in which the remission is well marked, and exacerbation of the disease occurs about the same hour daily, it was formerly supposed that the disease was distinct in species, and more nearly allied to ague than to continued fever. But the examination after death discovers ulceration of the intestines in all these cases; and by a close inspection of the skin in the majority of patients, the peculiar rose spot already described can be detected on the abdomen.

In typhoid-fever affecting young children, an increase of the heat and flushing is particularly liable to recur about nightfall; indeed, during the whole course of the disease the influx of fever is frequently likened, and not inaptly, to the ebbing and flowing of the tide.

The same treatment is required for this as for the other forms of typhoid-fever; and however regular the exacerbations may be, no good is to be expected from the use of quinine in checking their recurrence.

The regularity of the evening flush does not increase nor diminish the danger. It is the frequency and the severity of the flushings or paroxysms that denote the intensity of the diseased action.

Intermittent Fever, or Ague.—This disease, once so prevalent throughout England, is now very much more rarely met with. Two causes have rendered its occurrence less frequent, and both are trophies of science—the introduction of Peruvian bark, and the subsequent preparation of quinine, have made the disease more amenable to medical treatment; while the practice of land and surface draining has still more powerfully acted in banishing this pestilence from our shores.

The disease has two stages, which are called the paroxysm and the intermission. The paroxysm, or the "fit of ague," commences by a sense of chilliness, which gradually increases; the patient soon begins to shiver; his face becomes shrivelled, and as though it were nipped with cold; his nose is blue; his face and lips pallid, and his teeth chatter. But the skin is often warm to the touch, and the pulse small and feeble. This state is the cold stage of the paroxysm or fit. After a while the patient, who is generally forced by his feeling of coldness to take to his bed and to cover himself with blankets, gets a little warmer. His warmth increases, and he becomes hotter and hotter, till he burns with heat; his face loses the shrunken appearance—he becomes flushed, his skin hot, and at first dry, his pulse full; and after an interval he breaks out into a copious sweat. The patient often falls to sleep at this stage, and he awakes after an hour or two, apparently quite well.

If the patient has another such fit on the following day, he is said to have a quotidian; that is, daily ague. If the fit recurs every other day, the disease is said to be tertian ague. If two whole days intervene between the fits, the patient has what is called a quartan ague. The period between the paroxysms constitutes the other or intermediate stage of the disease.

The quotidian is, of course, the most severe form of ague. The fit commences earlier in the day, and its duration is also longer than the other kinds.

The tertian is the most frequent form, and in it the cold stage commences most frequently about noon.

If the disease is neglected, the constitution at last suffers much; the patient becomes weak, pallid, and enfeebled; often sallow and dropsical; and the spleen becomes enlarged.

The treatment consists in the removal of the patient from the marshy locality. This alone is sufficient, in many instances, to effect the cure; but if not, two or three grains of quinine, administered three times a-day, with such nourishing diet as the patient can take, will speedily put an end to the disease. In some few cases those remedies have, however, failed; and arsenic, in very minute doses, has been administered with good result.

To prevent the recurrence of the disease the neighbourhood must be drained, and no stagnant water allowed to remain on the surface of the land.

The cure is generally denoted by the gradual lengthening of the duration of the intermission—a quotidian becoming a tertian ague; or two days intervene between the fit—then three; but at the same time the fit becomes shorter and less severe, till at length no recurrence of the paroxysm takes place, and the cure is complete.

SCARLATINA is popularly supposed to be a different disease from scarlet fever. This is an error, scarlet fever being merely the technical name of scarlatina. The most severe and the mildest cases are termed by medical men, indifferently, scarlatina, or scarlet fever.

Scarlet fever is comparatively unfrequent after childhood; the cause of this appears to be, not that adults, as such, are insusceptible to the disease, but that the majority of persons have been affected by it in childhood.

Like most of the other specific diseases, scarlet fever varies greatly in severity,—sometimes it is a disease so malignant as to kill in a few hours, at other times its symptoms are so mild that the patient is almost unconscious that he is ill.

The first symptom of scarlatina in an adult is usually considerable stiffness and soreness of the throat; this is quickly followed by shivering or chilliness, heat of skin, headache, thirst, and frequent pulse. In children these latter symptoms ordinarily precede complaints of sore throat. Among the symptoms less constantly present on the first day of disease are vomiting, and, in children, convulsions.

The rash from which the disease derives its name appears on the second day of illness—*i.e.*, supposing the child to have sickened on Monday, the rash may be looked for on Tuesday. The rash breaks out first on the throat and chest, it then affects the face and trunk, and extends in two or three days to the legs and arms. When first

visible it consists of minute scarlet points; these soon grow so numerous as to unite and tint the skin generally of a scarlet hue. The colour is sometimes as vivid as that of the shell of the boiled lobster; at others, it is only a faint scarlet blush. When the rash is fully out, the face is a good deal swollen, the skin is very hot, the pulse is very rapid; the patient's mind may wander at night; the tongue is intensely red or white, with red points projecting through it, and the throat red and swollen; there is often, too, at this time, more or less swelling externally, about the angle of the lower jaw on either side. On looking down the throat ulceration of the tonsils is sometimes visible, but more commonly what at the first moment appears to be an ulcer, is only a patch of adherent secretion. The rash of scarlet fever attains its maximum extent and intensity on about the fifth day.

From this date all the symptoms of the disease quickly subside, and in three or four days may altogether disappear. On or about the fifteenth day—sometimes, however, at a much earlier period—the skin begins to desquamate in small bran-like scales from the surface generally, but from the hands and feet the separation of the cuticle takes place in large flakes.

In a considerable proportion of cases, a fortnight or three weeks after the rash has faded the face is observed to be fuller than natural; and if the feet be examined they are found to be swollen; the patient has scarlatinal dropsy; the urine is at the same time small in quantity and of dark colour. Under these circumstances he may be suddenly seized with convulsions.

There are no remedies which can directly cure a case of scarlet fever. The room in which the patient lies should be carefully kept cool, and freely ventilated; his bed should be very lightly covered, and all his flannel clothing removed. Cold sponging of the whole surface, when the skin is very hot and the patient does not feel chilly after, affords considerable relief. The bowels should be kept moderately lax. No other medicines are needed in mild cases. In severe cases the treatment varies according to the intensity of the disease. Sometimes danger is occasioned by the occurrence of local inflammation, and at others by extreme debility. In the latter case brandy and ammonia may be demanded; in the former, blood-letting may be required. During the period of desquamation great care must be taken that there be no exposure to cold, as such exposure is generally supposed to favour the occurrence of dropsy. Warm baths are, during convalescence, of considerable

advantage; and, should dropsy supervene, confinement to a warm room is essential for recovery.

Measles, or Rubeola.—Of all the eruptive diseases, such as scarlet fever, small-pox, &c., measles is that which is most confined to children. It is but rarely met with in adults. It is estimated, in fact, that nine-tenths of all the cases of this disease occur in children under ten years of age.

It is most frequently a very mild complaint, about three to six per cent. of the cases of the disease terminating fatally. It must, however, be confessed that it frequently appears to give origin to other diseases, and that scrofula and phthisis often date their commencement from an attack of measles.

During the first few days of the illness, the patient appears to be labouring under the symptoms of a severe cold. There is some running at the nose, a little watering of the eyes, occasional sneezing, and perhaps some cough. In a very mild case, these may constitute all the phenomena of the onset of the disease. But in a case of more severe character there will also be more or less lassitude, and some shivering and complaint of cold; possibly also vomiting; the eyes may be swollen; and in some cases tightness and pain in the chest. This last symptom is the most important, perhaps, of all, as the fatality of the disease is almost wholly due to inflammation of the lungs. It is about the fourth day of the attack, or the fifth, that the eruption makes its appearance. It may, however, occur several days earlier or later.

The rash presents the following characters. It is of a light mulberry colour; it consists of dots, or spots, of the size of small split pease, closely congregated, and in places running into each other. The eruption is elevated. It occupies the face, which distinguishes it from most other eruptive fevers, with the exception of small-pox, —rash being rarely seen on the face at an early period—the rash gradually extends from the head and neck to the rest of the trunk. On the decline of the disease, the eruption gradually becomes paler.

The treatment in the mild cases consists of a gentle aperient, and, while the tongue is coated, a diet of slops; and if much thirst exist, copious libations of cooling drinks—as water, toast-water, capillaire lemonade, &c. But if there be cough, and any pain in the chest—or the respiration quickened—it is necessary that the chest should be examined; indeed, no medical man would probably omit to do this in any case of measles. Should inflammation of the lungs (pneumonia) be discovered, the treatment recommended for that disease

must be at once resorted to. The patient's bed-room should be airy and cool, and the patient himself lightly covered, but not exposed to drafts.

In those cases in which the tongue becomes dry, the pulse more than 132, and especially when the eruption assumes a darker or more livid hue; and small dotted points of red colour (petechiæ) are sprinkled about the legs and feet, wine and ammonia are necessary to a child of six to eight; one or two glasses of sherry may be given a-day, and two grains of carbonate of ammonia dissolved in water every four hours; and for diet, strong beef-tea, made by infusing one pound of beef in a pint of water. When these symptoms are present, the occurrence of difficulty of breathing, or cough, will not alter the indications of treatment, only a mustard-poultice may be applied frequently to the chest in addition.

Small-Pox, or Variola.—This disease, now much less common than formerly, still occasionally breaks out with fitful but enfeebled energy. It was very prevalent in 1838 and 1851, but it is now again lulled. It is probably the most infectious of all diseases; instances have been well authenticated of persons taking small-pox from a mere momentary exposure to its contagion. The introduction of inoculation by Lady Mary Wortley Montagu in 1718, and vaccination in 1796, are important eras in the history of this disease. The great facilities at present existing for vaccination, and the compulsory powers given by the late enactment for the vaccination of all classes of the community, will probably render the disease still more uncommon than it has already become. It is to be hoped that few opportunities will again occur for recording the following account of the visit of an attack of natural or unprotected small-pox.

It is not until several days after the exposure of a person to the contagion that decided symptoms begin to manifest themselves—the interval is called the period of incubation, and is of about twelve days' duration. It varies, however, from seven to fourteen days. In severe cases the period of incubation is shorter; the patient, however, is not perfectly free from anomalous sensations in the interval. On the onset of the decided symptoms, about the twelfth day, the patient is seized with severe shivering, great pain in the back of the head, pain in the loins, vomiting, hot and dry skin, and quickened pulse, sometimes even convulsion and delirium. Counting this the first day, then about the third day, or after the lapse of forty-eight hours, the eruption begins to appear. It is first to be detected about the face and neck. It consists of small, round, bright-red

points, sensibly elevated above the surface of the skin, which are entirely effaced by pressure, but quickly re-appear when the pressure is removed. These red spots (papulæ) increase in number and size, and the rash extends to the trunk and extremities, and new spots continue to appear up to about the fifth day* of the disease, or the spots or papulæ gradually increase in diameter, become a little flattened on their summits, with a central point, which is depressed. The papulæ or pimples are now transparent, and contain a fluid. In this stage they are true vesicles, that is, small bladders, though they are not round but flattened at the summits.

Now, according to the amount of eruption, or number of these vesicles, the cases of small-pox have been arranged into groups and sub-classes.

When the vesicles or pocks touch and are closely congregated, when, in fact, they apparently *run into one another*, the case is said to be one of confluent small-pox.

When the pocks are single and wide apart, the case is called "*discreet*," or distinct.

An intermediate condition between the discreet and confluent eruption is called semi-confluent.

When the eruption has advanced to this, the perfect vesicular stage, which it does on about the sixth to the eighth day of disease, there is a considerable lull of all the feverish symptoms, especially in the discrete and semi-confluent cases. It would appear, in fact, that the poison imbibed has done its worst—the seed sown has thrown out its crop, and the crop now must ripen and die.

The danger is over, then, so far as the original dose of the poison is concerned. The patient, indeed, at this period, is so much improved in his feelings, as often to consider himself safely passed through the disease. But the peril is still impending; the poison may have expended itself in the production of an abundant crop of vesicles—but the patient is left with an important and vital organ, viz., the skin, seriously involved in disease. It is to this circumstance that death is owing in the majority of cases. It is to the state of skin that death by small-pox is to be chiefly accredited.

The case, as it were, is now passed from an internal malady to one of external or a surgical disease, and it requires henceforth to be viewed in this light. The vesicles pass from their transparent and flattened form into an opaque semi-globular pimple. This process is

* In all calculations of the date of diseases the first and last day are both inclusive.

called the ripening or maturation, and it commences about the sixth or eighth day of the disease. The round yellowish opaque pock becomes, after the lapse of a day or two, of a brownish colour in the centre; it then bursts, a small quantity of matter oozes out and dries, and gives rise to a very peculiar and offensive odour. In favourable cases, this dark crust falls off, and leaves, for a time, a reddish mark in its place, and the patient speedily recovers his strength. But the maturation, which, indeed, is a suppuration of the vesicle, is attended at times with much swelling of the parts, especially where the eruption was originally the thickest, as in the face and hands; the face becomes tumid; the eyes often closed by swelling of the eyelids; and in this stage the features are so altered that the countenance of the patient is no longer recognisable.

Considerable febrile disturbance again sets in such a case; and its amount of severity is an index to the degree to which the functions of the skin have been interfered with, and indicates, also, in an inverse ratio, the ultimate hopes of recovery.

Should the patient become delirious the danger is enhanced, but the case is by no means hopeless on this account; if, however, the pulse become very rapid—that is, above 130; and if the tongue becomes brown or very much swollen; or if the vesicles flatten without drying, or become filled with a fluid of clarety colour; if involuntary evacuations occur—the case is more serious: inflammation of the internal organs also springs up at this period, and greatly adds to the danger. Inflammation about the larynx or windpipe, and inflammation of the pleura or lining membrane of the chest (pleurisy), are liable to occur at this stage.

This secondary fever takes place from the seventh or eighth day to the thirteenth. The second week is, therefore, the most to be feared in small-pox. Out of 168 patients, 32 died during the first week, 99 during the second week, 21 during the third week, 16 after the twenty-second day, as recorded by Dr. Gregory, from the records of the Small Pox Hospital. The average mortality of all cases of unprotected small-pox is stated, by the same eminent authority, to be one in four.

The deaths that take place after the second week are often due to secondary affections—as to pyogenic fever, or what is called purulent infection of the blood; to erysipelas; to the weakening by painful boils and local swellings; and occur chiefly in those previously in a weakly and debilitated condition.

The above sketch is that of the course of unmodified, or natural

small-pox; but it occasionally happens that a person who has been vaccinated is attacked by the disease.

It not unfrequently happens that the onset of a case of modified small-pox is as severe as in natural small-pox; the fever runs high, the pain in the back as severe, and the eruption as full, or confluent. The difference consists in the progress after the first week. At this period, just as one begins to anticipate the accession of the secondary fever, and when the danger apparently is approaching, the illness abruptly terminates, the vesicles dry up, and the patient is suddenly and quickly restored to health.

The treatment of small-pox differs in the three stages of the disease prior to the eruption. If the patient is strong, saline purgative medicines are useful; if the febrile disturbance is great, antimonials and cooling drinks. He should sleep in an airy bed-room, and be lightly clothed. It is always necessary to have the patient's head shaved at this period, and on no consideration should this procedure be omitted, more especially in females; the operation often relieves the headache; and in the second stage of the disease, when the eruption is maturating, the offensive state into which the hair would inevitably become involved, would greatly add to the patient's sufferings.

In the second stage, or stage of secondary fever, much the same means will be required, so long as the pulse is full and strong; but if the pulse fail in its power, and the feet become cold, and the eruption at all livid or flaccid, wine must be given. It not unfrequently happens that considerable salivation takes place in small-pox; so that the presence of a brown and dry tongue must not be looked for to give the indication of the administration of wine. If the face in the second stage is swollen, relief is afforded by cooling applications, and of these cold water is the best.

The surface may be gently wiped with a moist sponge. Should pleurisy, or inflammation of the throat, come on, calomel and opium must be given; one grain of the former, mixed with half a grain of the latter, being the dose for an adult, and this to be repeated every three or four hours, but not carried to salivation. The bowels should, of course, be regulated, and castor-oil is the best aperient to use in these cases. The diet should consist of beef-tea, calf's-foot jelly, and arrow-root, in the mildest form; and in the worst, egg-wine and egg-brandy are useful, both as medicine and food.

In the third stage, the occurrence of erysipelas, inflammation of the eyes, or swelling of the joints, must be treated according to the

rules given for those affections occurring without connexion with small-pox. Bearing always in mind that these affections, when occurring after a lengthened and debilitating illness, require, as a rule, as generous and nourishing a diet as the patient can take.

Cow-Pox, or Vaccinia.—The effects and history of vaccination are now, happily for the human race, so well known that it is hardly necessary to describe vaccinia, or cow-pox, particularly after the preceding remarks. For the sake of method, however, it cannot in these pages be omitted, and a very brief account of it will suffice for the purpose. As its name implies, it is a disease of the cow. It arises spontaneously in the animal; and if artificially transmitted to man, may preserve him from the infection of small-pox. It is not, however, confined to the cow. It appears in the horse under the form of "grease in the heels;" and farriers, as well as milk-maids, as they have received the contagion from either animal, are alike exempt from the susceptibility to variola. Cow-pox is a semi-transparent, pearl-coloured vesicle with a circular base; its surface, until the eighth day after vaccination, when it attains its perfect form and full size, being more elevated at the margin than in the centre, and filled with clear lymph. After the eighth or ninth day from the insertion of the virus, it is surrounded by a dark-red, circumscribed areola, or circle, which varies in its diameter, in different cases, from a quarter of an inch to two inches, and is usually attended with a considerable tumour and hardness of the adjoining parts. This areola declines on the eleventh or twelfth day, when the surface of the vesicle becomes brown in the centre, and its contents concrete into a hard rounded scab, or crust, of a reddish-brown colour, which at length becomes darker, contracted, and dry; but is not detached till three weeks after vaccination. Such is the progress of genuine cow-pox. At times, fever occurs about the ninth or eleventh day; but at others, not the slightest inconvenience is felt. If the eruption runs speedily to a height—has an areola too early—is irregular at the edges, and contains matter (pus) instead of a limpid fluid—it cannot be depended upon as a true cow-pox and a preventative against the ravages of small-pox (*Dunglison*). There is always more or less constitutional disturbance, but, except under very untoward circumstances, no further treatment than light diet, and, if necessary, a little opening medicine is required—a teaspoonful of castor-oil or saline aperient draught are the most appropriate.

Unquestionably, cow-pox and small-pox are identical. They differ not in kind, but in degree; the former being a milder or more modi-

fied form of the latter. It is thus that vaccination possesses its prophylactic or preservative powers, since the human frame is so constituted that, for the most part, if not entirely so, it can be but once susceptible to the peculiar infection. It is well to practice re-vaccination, especially during the prevalence of small-pox. It cannot, however, be denied that fatal cases of secondary small-pox have occurred; and instances are recorded of a patient suffering even a third time from the disease.

As regards the protective power of vaccination, the following instructive tables, quoted by Dr. Guy, of King's College, have been prepared:—

Epidemic in Scotland, 1818-1819.

	Unprotected.	Small-pox second time.	Small-pox after Vaccination.
Cases	205	71	310
Deaths	50	3	1
Proportion	1 in 4	1 in 23	1 in 310

The following table, reduced to a uniform scale of 15,000, is founded on the facts recorded by M. Favart during an epidemic of small-pox which took place at Marseilles in 1828. The estimated population under thirty years of age was 40,000, of whom 30,000 had been vaccinated, 2,000 had had casual small-pox, or small-pox by inoculation, and 8,000 were unprotected. The inference to be drawn from these facts is, that vaccination, though a less complete protection against attacks of small-pox than inoculation or a previous attack of the disease, is the best existing protection against a fatal attack of small-pox.

Marseilles.—Epidemic of 1828.—*Estimated Population*, 40,000.

	Unprotected.	Previous Small-pox, or Inoculated.	Vaccinated.
Estimated number	15,000	15,000	15,000
Attacked	7,500	150	1,000
Died	1,875	30	10
Proportion of attacks to estimated number	1 in 2	1 in 100	1 in 15
Proportion of deaths to attacks	1 in 4	1 in 5	1 in 100

The deformity which follows small-pox is very distressing; and many means of preventing it have been suggested.

Thus, the Arabian physicians were in the habit of opening the pustules after suppuration had commenced, of pressing out their liquid contents, and of then washing the surface with warm milk and water, decoction of poppy-heads, &c.; and Rayer speaks favourably of the

practice. But a more effectual method is that of cauterizing the pustules with nitrate of silver, as recommended by Bretonneau and Serres. The former cauterized each pustule separately, the latter made the application to masses of the eruption. The best plan is probably to open each pock upon the face as soon as it has become vesicular, either by a pointed probe or lancet, and then to apply a stick of nitrate of silver brought to a fine point, or a very strong solution by means of a probe. The progress of the eruption is thus frequently completely arrested; and, at the end of a week, the scales fall off without leaving pits. To succeed, however, the operation must be performed as early as the second, or, at furthest, the third day. When the solution has been applied uniformly over large surfaces, it has been found that the work of suppuration and ulceration still goes on beneath the blackened cuticle.

Still another method of causing the pustules to abort is the use of the mercurial plaster, as recommended by M. Briquet, who deserves the credit of bringing the method into general notice, though known and practiced by others before him. If applied at the very commencement of the eruption, it is asserted to have the effect of producing a resolution of the papillæ; if during the vesicular stage, of causing them to dry up into tubercles, or at least preventing suppuration, and ultimate pits or scars. No injury results to the constitution from this abortion of the pustules; but, as is asserted, rather benefit from the diminished amount of irritation. The effect is ascribed to the specific action of the mercury; as other methods of excluding the air were not found so effectual. The application is usually confined to the face. The whole face should be covered by the plaster, as by a mask, openings being left for the eyes, nostrils, and mouth. The plaster may be removed after four or five days. If longer continued, it is apt to produce unpleasant irritation. The only hazard from this remedy is a mercurial salivation, which, however, does not usually occur, and, should it do so, would perhaps be rather useful than injurious.

A preparation employed in the Children's Hospital in Paris, and which succeeds "marvellously well," is made by incorporating together twenty-five parts of mercurial ointment, ten parts of yellow wax, and six parts of black pitch. It is said to be completely efficacious. M. Briquet recommends mercurial ointment simply thickened with powdered starch. As the ointment sometimes salivates, it should be diluted with an equal proportion of lard, and then stiffened with starch.

It is said that sulphur ointment, applied several times a-day to the face, in the earliest stage of the eruption, has a similar effect; and Dr. Samuel Jackson, of Philadelphia, employed the tincture of iodine for the same purpose with apparent advantage. He applied the tincture freely and continuously over the affected surface by means of a camel's-hair pencil. Drs. F. Sargent and Goddard, of the same city, afterwards used the application in numerous cases; the former, with a decided effect in diminishing the inflammation and swelling, but with no appreciable influence on the pitting; the latter, with a complete prevention of pitting, even in confluent cases.

The idea has been advanced, that the influence of the atmospheric air is essential to the development of the pustules, and consequently that they may be rendered abortive by anything which will exclude this influence. M. Serres has found that their progress is arrested by covering them with little cups of darkened glass, or involving them in honey or fatty matter; and collodion has been employed for the same purpose, with asserted success, by several practitioners.—(*Wood's Practice of Medicine.*)

CHICKEN-POX, OR VARICELLA, is in like manner supposed, especially in the German medical school, to be a still more modified form of small-pox than that last described. But I cannot think this to be the case, since the two affections exhibit distinct diagnostic differences. Of these it is sufficient here to observe that the vesicles of chicken-pox, which generally first appear on the back, are oval and not round; neither is there any indentation or "pitting" in their centre, as in the former, and that the crusts fall off about the *fifth* day. Varicella, too, is not known to be preventative of small-pox. The complaint is free from danger; seldom requires the aid of medicine; and leaves no marks behind it. In chicken-pox, the fluid is at first pellucid, then whitish, and afterwards straw-coloured. When the vesicles are pointed instead of flattened, and contain a clear fluid throughout their course, the disease is called *swine-pox;* and when the vesicles are very large and globular, and filled with a yellowish fluid which deepens in colour, it is popularly called *hives.*

ERYSIPELAS.—Erysipelas is often called the "rose" in Scotland. Like the various fevers, it is an acute blood disease, and like them it is infectious. Erysipelas is characterised by a peculiar inflammation of the skin; the affected part is red, slightly swollen, and hotter than natural; the line of demarcation between the healthy and diseased part is abrupt and well-defined. Sometimes vesicles of large size form on the inflamed part. The part first affected is usually the bridge

of the nose, or the cheek adjacent: from this point the inflammation extends in all directions; the eyelids are often closed from the effusion of watery fluid into the loose tissues of which they are formed. When the face is extensively affected, the features of the patient can no longer be recognised by his most familiar friends, so great and uniform is the redness and swelling. The whole of the scalp may ultimately become affected. At the same time that the erysipelatous redness shows itself on the face, the patient feels some soreness of his throat, and on examination, the latter is found to be red and swollen.

The inflammation of the face and throat is secondary to the blood disease; at the same time the patient may die from the severity of these local affections.

The first general symptoms of erysipelas are shivering and headache, followed by heat of skin, rapid pulse, and thirst. Vomiting of acid green fluid is frequently observed at the commencement of the disease. The disease runs its course in about ten days or a fortnight.

As in all other diseases of its class, cleanliness, ventilation, and plenty of fresh air are of more importance even than medicine. As a rule, persons suffering from erysipelas bear depressing remedies badly — simple salines, taken while effervescing, if there be any vomiting, mild alterative aperients, and a light diet, are all that should be prescribed at the commencement of the disease. Subsequently it often becomes necessary to administer bark, wine, and ammonia. One of the best local applications to the inflamed surface is common flour; it should be used in such quantity as to conceal the skin from view: a strong solution of nitrate of silver is said in some cases to check the spread of the skin affection. The hair should be removed as soon as there is reason to believe that the hairy scalp will be involved in the inflammation.

When the throat is seriously affected, the patient's life is in considerable danger; and powerful topical applications have, in such cases, been resorted to. A strong solution of nitrate of silver may, in some such cases, be applied by a sponge to the throat with advantage.

After injuries in persons of bad habit of body, the result of intemperance, &c., the skin adjacent to the wounded skin often becomes the seat of inflammation, similar in character to that which affects the face in the above-described disease. This secondary inflammation of the skin is commonly known by the same name as the specific disease.

CHOLERA.—Cholera! dread, ill-omened fiend, in whose presence the stoutest heart will quail, and every face be blanched with fear!

I will not stop to consider the causes that have made cholera a denizen of the land, and almost as familiar among our people as those diseases from which no man is supposed to escape. Suffice it here to say that it is so; and that the mortality from this very plague, in every part of Europe, and under every variety of medical treatment, has been the same,—in every part of the world nearly the half of those attacked having perished! But have no remedies been proposed—no means of cure? Their name, indeed, is Legion; but still none of the so-called remedies have been proved to exercise the least influence upon the progress of the disease they were invariably to cure. Let us briefly review some of these remedies. A dozen pages would not enumerate all that have been proposed; and so heterogeneous, so opposite and contrary are they, that they defy classification. Learned and unlearned, rich and poor; men who had resided in their own parish from the time they first saw light, and men who had journeyed from east to west; men who had never opened a medical work, and men—and women too—whose inspirations were drawn from the pages of Buchan, or whose learning was limited to the herbal of Culpepper. In England confidence was claimed for a drug because it was extensively used in India, where cholera slays its hundreds of thousands, uninfluenced by the infallible charm. In India the last mode was imported from England, where notoriously some forty to fifty per cent. of those attacked with cholera have died.

The only fact we learn from the list of drugs thus paraded, is, that none were really of use; while the practice of the homœopath affords us a pretty good criterion of what proportion of those attacked will die, when Nature is left to her own efforts to effect a cure. Omitting the complex methods by which cholera was to be vanquished, what were the simple specifics that were to cure—infallibly cure—the fearful enemy? Water, of every temperature! "Wrap the cholera patient in a cold sheet!" say some. "Dash cold water repeatedly over the sheet in which he is enveloped!" says a second. "Ply him with cold water internally!" says a third. "Freeze him; cool his blood to thirty degrees below zero!" adds a fourth. "Fools!" exclaims a fifth, "thus to treat the half-dead man. I say, wrap him in sheets soaked in boiling water; and having thus half cooked the shivering wretch, conclude the process by placing him over the boiler of a steam-engine!" "My theory," shouts one man, "is that oxygen reddens the blood, and by its action on that blood generates heat; therefore make the patient inhale oxygen!" "Nay," rejoins

another, "the blood in the lungs is too bright; oxygen has nothing to do with the generation of heat: stifle him with carbonic acid!" "Not so," insists another, "I alone can cure cholera; I alone reduce mortality; I alone am worthy of credence. Pickle your patients, throw brine into their veins, and let salt and water fill their stomachs and intestines!" "It is evident," avows one sapient doctor, "that there is no bile in the stools, therefore calomel should be administered." "It is plain," says another, "that diarrhœa is the great evil, therefore let him have opium;" *i.e.*, the drug which effectually prevents a free flow of bile. He is cold and depressed; what so natural as to stimulate? The wisdom of the proposal is proved by the numbers who recommended its adoption; the folly of the many is manifested by the proportion who died under the use of stimulants. "Give him alkalies," vociferates one man. "Nay," says another, "lemon-juice and acids are the true remedies." "It is simply a stage of intermittent fever," maintain some; "therefore," they add, "the drug for its prevention and its cure is quinine." "Not half potent enough," whispers a supporter of the same theory; "give him arsenic!"

Certain fanatics refuse the use of medicine, but, in the course of their religious mummeries, administer to the credulous a cup of olive oil. A patient recovered, and "Eureka!" shout the populace. "Vox et prætcrea nihil," say those who wait a while before they decide. Opium, in one man's mind, is a specific in small doses; the twentieth of a grain frequently repeated. "Nonsense," says another, "opium is a specific; but let it be given in doses of from six to twelve grains." The latter has one advantage; if the power of absorption yet remains to the stomach, the patient will assuredly be saved all further pain, and, if he be a good man, mercifully provided for in a better world. However, as the duty of the doctor is to keep men here, and not to hurry them off there, we suppose twelve-grain doses of opium will not be very extensively recommended by the profession.

"Calomel is the specific that will stay every symptom of the cholera, bring back the absent pulse, restore the genial warmth of the icy skin, bid bloom again the leaden cheek; give it then freely, in large doses; give twenty or thirty grains, and see its magical effects!" "Do so," says an equally devoted admirer of calomel, "and you will give the last blow to the dying wretch. Calomel is the remedy; but it must be insinuated into the system in small doses, frequently repeated." "Bah!" replies the first, "if you follow this

man's whim, the patient will slip through your fingers." Then come other infallible specifics—pitch, sulphur, phosphorus, and carbon; gold, silver, zinc, and lead; strichnine, salicine, morphine, and cannabine; hackish and zhorabia; abstraction of blood, and injection of blood; perfect repose and incessant motion; to the skin, irritation the most severe, applications the most soothing; stimulants the most violent, sedatives the most powerful; inhalation, flagellation.

But if these are the simple, what are the complex methods of treatment that have been proposed? A combination of all the absurdities contained in the foregoing. Let us just draw the reader's attention to one compound method of treatment. Here are the remedies proproposed by one gentleman:—port wine, calomel, opium, sulphate of potash, powdered ipecacuanha, spirits of nitric ether, cardamom-seeds, raisins, caraway-seeds, cinnamon, cochineal, camphor, aniseed, benzoic acid, benzoin, storax, balsam of tolu, aloes, rhubarb, sal-volatile, ipecacuanha wine, biborate of soda, oxide of bismuth, spirits of wine, nitrate of silver, tartar emetic, potassa, bismuth, calumba, canella, sulphuric ether, cayenne, brandy.

What a divine afflatus must have distended the mind of the proposer of the above remedies, ere he could have conceived the idea of bringing such an assemblage of drugs into one prescription! Think of the wisdom that must have guided the choice of each, and apportioned the fitting dose! And then fancy that all are to be administered to the same unfortunate stomach during the short space of forty-eight hours! Byron's dish, which even the good-natured Grimaldi could not stomach—apple-pie with anchovy sauce—was nothing to it!

One learned Parisian doctor, discarding the hitherto sacred numbers—the Pythagorean charm—proposes *four* cups of *sweetened* lime flower, mint, balm and camomile tea, each to contain *four* drops of volatile alkali. Four drops in each of the four cups—neither more nor less—sixteen drops of sal-volatile, and a little mint tea. Surely nothing could, in one sense, be more simple than this! Oh, yes! there is one more simple still—milk and homœopathy! If not more simple, far more disgusting; and not more sapient was the proposal that cholera patients should quaff goblets of fresh-drawn blood!

From 35 to 50 per cent. of the cases of cholera for which nothing was done, in which no treatment was employed, proved fatal—that is to say, cases in which nothing was done proved as fatal as those in which "remedies" were resorted to.

Although he cannot but be struck with the impotence of the efforts made to check the progress of cholera, yet must the historian

of the disease rise from his labours with high admiration of the nobleness of the moral character of our profession.

In it he sees examples of men who sacrifice their own lives for the good of their race, with a noble self-devotion far above all praise. Curtius, with Rome to gaze and applaud, could offer himself a willing sacrifice for his country's good, and win an immortal name. The soldier, stimulated by a sense of honour, will rush to danger, with a certainty that if he dies, his country will assume the protectorship of his wife and children. But no such assurance stimulates the medical warrior, and he must encounter danger, and too often death, with neither glory to be gained with success, nor the hope of gratitude of his country, if he fell.—*Cholera and its Cures, by Dr. Bushnan.*

But is there really no cure for cholera? Is no hope to be placed in any of the many vaunted means that have been proclaimed specifics? Dr. Stevens confidently asserts that, by his saline treatment, he has reduced the mortality in cholera to less than that of typhus-fever; and although, in the hands of the many, his method, which consists of one scruple of the sesquicarbonate of soda; one drachm of chloride of sodium—that is, of common salt; and seven grains of chlorate of potass, dissolved in half a tumbler of water, and administered, according to the severity of the symptoms, every hour or half hour—has utterly failed; yet his own evidence, and that of the few in whose practice it has proved successful, must not be disregarded. But is nothing to be done when cholera is abroad, and by unmistakeable symptoms proclaims its awful presence? Yes! much. Ovid has well expressed what should be done:—

> "Principiis obsta, sero medicina paratur
> Cum mala per longas convaluere moras."
>
> Meet the disorder in its primal state:
> Delay is death—a moment is too late.

Fortunately cholera does announce its approach; and then is the time when an attempt to arrest its progress is to be made with the greatest hope of success. Not that this is always the case. Unhappily it is sometimes otherwise, and then the patient may be at once prostrated by collapse. But this is the exception and not the rule; and diarrhœa gives warning of that which may succeed. Its onset is generally marked by a furred tongue, irregular appetite, thirst, impaired digestion, colicky pains, hiccough, nausea, and frequent aloine discharges, sometimes bilious, but more generally of a dirty white colour, and turbid, and not unlike thin oatmeal gruel. Now,

then, is the time to interfere. To the chalk mixture used in cases of diarrhœa in doses of two table-spoonfuls every half hour, we must add a tea-spoonful of tincture of catechu, or we must give thirty drops of dilute sulphuric acid every half hour, adding to the first and every alternate dose twenty drops of laudanum. Determination to the skin must be sedulously encouraged by the application of mustard poultices to the abdomen, and hot fomentations; bottles of hot water must be placed along the legs; and the feet placed in hot water, rendered more stimulating by the addition of mustard, cayenne pepper, or common salt. Moderate friction over the surface, by the hand alone or with flannel, must be pursued; and if the patient be weak and exhausted, small quantities of brandy, or a tea-spoonful of sal-volatile, is to be exhibited. Vomiting and thirst are often allayed by small quantities of soda-water, or ice, as recommended in simple diarrhœa; and if the attack ceases, the greatest care and rest must be enjoined, and solid food and exposure to cold cautiously avoided. But in all cases of diarrhœa, during the prevalence of cholera, the medical attendant ought immediately to be summoned; and if collapse and cramp should, before his arrival, set in—that is, if the eyes become sunk, and surrounded with a dark circle; the features contracted; the surface or the nails purple or blue; the extremities shrunk; the hands clammy and sodden; the pulse at the wrist small or imperceptible; the voice reduced to a whisper; the tongue cold and flabby; the temperature low; the urine suppressed—then; aye! what then?

Re-action is to be promoted by external stimulants; large draughts of salt and water—three table-spoonfuls of salt, and a scruple of chlorate of potass, to a quart of water—repeated every quarter of an hour, until the desired effect is produced, or death claims its victim.

CHAPTER XI.

GENERAL BLOOD DISEASES.

We now approach the second class of diseases, namely, those general diseases of the blood which are not contagious; and first of

Gout.—The ordinary phenomena of a fit of gout are so familiarly known in this country that it will be sufficient to enumerate them

very briefly, before passing on to the consideration of some other more important points in its history. The attack generally commences about two or three in the morning; the patient is suddenly awakened by a severe, burning pain in the ball of the great toe, or, less frequently, in the instep or ankle; this gradually increases until it amounts to agony, and continues for about twenty-four hours, when it begins to remit: the patient at last succeeds in falling asleep, and awakes comparatively free from pain, and with the affected joint red, tense, and swollen. The same series of symptoms may be repeated several times before the disease, for the time, disappears; and in cases of long standing they undergo considerable modifications, as well in severity as in regularity, and in the completeness of the intermissions. It is not surprising that the attention of the public—and even, in many instances, of physicians—should have been for long confined chiefly to this, the paroxysm of the disease, and that the intervening symptoms, the various derangements, often nearly imperceptible, by which the material for such outbreaks is furnished, should have met with comparative neglect. It is to such derangements, however, that we are taught by modern pathology to look for the true source of the disease, and against them that our efforts must be directed, if we would endeavour to eradicate it from the system. It has been clearly shown by Professor Garrod, of University College, that there is a gradual accumulation in the blood of an actual "materies morbi," a poison generated by faulty assimilation, and which can be separated by chemical processes from the blood of gouty patients; and what is termed a "fit of gout," is the method taken by nature to eliminate this material from the system, and to deposit it in the fibrous tissues around the joints, where it can no longer exercise its poisonous influence. In order to undertake the curative or preventive treatment of gout, it is therefore necessary to understand the causes which influence the production of this poison. Of these, by far the most potent is luxurious living, and insufficient exercise; hence the disease is peculiarly prevalent among the rich, and those generally whose habits are sedentary, while they indulge freely in animal food and alcoholic stimulants. Gout, however, may be the offspring of over-exertion, of over-excitement, or of over-strain of mind. It is not always the result of hearty feeding and of generous wine—the spoilt child of Bacchus and of Ceres; nevertheless, it is rarely seen in hard-working and underfed agricultural labourers; while among the servants of the wealthy—as butlers, footmen, and porters, a race who

"toil not, neither do they spin,"—it is far from uncommon. Certain articles of diet are much more liable than others to produce gout; animal food, and rich and indigestible substances of every description, which impair digestion, and induce a plethoric state of the system, are especially injurious. The free use of malt liquors, also, has been proved by extended observation to produce gout, even where the food is not peculiarly abundant or stimulating, and where the habits are laborious. Thus, among the coal-whippers and ballasters of the Thames, who consume several gallons of porter in a day, it is of frequent occurrence; while in whisky-drinking Scotland and Ireland, and in wine-drinking France and Germany, it is almost unknown. The strong, sweet wines of Portugal, however, which are consumed in this country, differ in this respect from the thinner productions of the French and German vineyards, and, like beer, not unfrequently vex the feet and knuckles of those who consume them in undue quantity.

The treatment of gout may be considered under two heads: that during the paroxysm or fit, and that during the intervals, when we have reason to fear the formation of the poisonous material.

Many of the victims of gout, old *habitués*, who are scarcely ever free from it, are accustomed to adopt the prescription of Dr. Cullen, "patience and flannel;" but such inert remedies are neither advisable nor safe, except in the very mildest cases. Where professional advice is not available, the patient should be kept warm in bed, and a gentle action should be kept up upon the bowels and skin. For the former purpose five grains of blue pill may be taken at night, and an ordinary black draught, composed of infusion of senna, Epsom salts, and tincture of jalap, in the morning. For the latter, two table-spoonfuls of the following mixture may be taken every three or four hours: spirit of Mindererus, three ounces; sweet spirits of nitre, half an ounce; bicarbonate of potash, two drachms; water, or camphor julep, five ounces. The best application to the affected joint is a thick layer of carded cotton, or cotton wadding, kept in its place by a large silk handkerchief, or a few turns of bandage; by confining the heat and moisture this forms a sort of local vapour-bath, and is one of the most effectual means of relieving pain. Cold applications, which were at one time very generally used, should be carefully avoided, as in many instances they have produced dangerous, and even fatal results; neither can the application of leeches be recommended, unless expressly enjoined by medical authority. Colchicum, a most valuable remedy when carefully administered, is

much too powerful and uncertain in its effects to be entrusted, with safety, to non-professional hands.

It occasionally happens, especially when it has been imprudently repelled from the extremities by cold applications, that the gout suddenly attacks the stomach, and proves rapidly fatal. The symptoms are violent pain, increased by pressure, sickness, vomiting, and faintness; but, as these may be occasioned by the presence of indigestible substances in the stomach, the effects of an emetic should be tried, when such a cause is deemed possible. Should this afford no relief, a full dose of magnesia (a tea-spoonful), or half a drachm of bicarbonate of soda, in very warm water, should be given; or, if the patient be very faint, and the pulse weak and fluttering, a small glass of brandy, or a tea-spoonful of sal-volatile, in a wine-glass of water, may be administered. At the same time, a mustard poultice, or a piece of flannel wrung out of very hot water, and sprinkled with turpentine, should be applied to the pit of the stomach, and the feet plunged in a mustard foot-bath, as warm as can be borne. By these means the disease may sometimes be recalled from the more vital organs, and induced to take up its position in a less dangerous locality; but it should never be forgotten that such an attack is attended with extreme risk, and that the measures above indicated can only be considered as temporary expedients, pending the arrival of competent assistance.

The treatment of gout during the intervals must be left chiefly to the patient himself; medicines are of little avail, except as they may be required for incidental disorders; everything depends upon the careful avoidance of such habits and modes of living as are proved to generate a tendency to the disease. Animal food should be taken, if at all, in small quantities, and not oftener than once a-day, and the least stimulating kinds should be selected; wine and fermented liquors should be altogether given up; regular and abundant exercise should be taken, and this may be done even by the old and feeble, if they adopt the precaution of stopping short of fatigue; the skin should be kept in a state of activity by the shower-bath, or by the daily use of the horse-hair glove; and the bowels should be regulated, if necessary, by small doses of rhubarb and magnesia, or, better still, by regular habits, and by slight variations in the nature of the food. The more carefully these rules are attended to, the more successful will be the result. He who has the moral courage to carry them out to their full extent, will find his reward either in complete immunity from pain, or, in more confirmed cases, in a very great prolongation

of the intervals between the attacks; he who has less self-command, will find that he will suffer in proportion to the extent of his indulgences; and lastly, as the hereditary nature of the disease is unquestionable, the most rigid precautions are requsite on the part of those to whom it has thus descended.

Rheumatism.—Rheumatism and gout, though distinct diseases, are closely allied to each other, and present several striking points of resemblance; they are both caused by contamination of the blood with a morbid poison; and in each, it is the tendency of Nature to eliminate this material by depositing it in the fibrous tissues around the joints: in certain forms of rheumatism the resemblance to gout is so close, that the term "Rheumatic Gout" has been popularly adopted. No such complication, however, exists. The diseases are different, and possess a marked distinction. In gout the uric acid may always be detected in the blood by the use of chemical agents and the microscope, while this particular substance has never been found in the blood of rheumatic patients. Again: in gout the urine is deficient in uric acid, while in rheumatism it is in excess. For this important diagnostic sign we are indebted to the researches of Professor Garrod. In well marked cases, the principal—readily appreciable—distinctions are as follows:—Gout rarely occurs before the age of puberty; rheumatism is very common in childhood and youth. Gout attacks first and chiefly the small joints; rheumatism the large. Gout is generally confined to one joint at a time; rheumatism often attacks many simultaneously. There is not such vivid redness of the affected joint in rheumatism as in gout, nor is the subsidence of the inflammation followed by itching and scaling of the skin in the former.

The exciting cause of rheumatism is exposure to cold, and this acts much more powerfully when accompanied by moisture, or when in the form of a draught of cold air when the body is overheated; certain cold winds also, especially easterly and northerly winds, appear to have a peculiar influence, independent of their mere temperature.

Rheumatism occurs in two principal forms, the acute and the chronic. In the former, popularly known as "rheumatic fever," the febrile symptoms are very high. The pulse is full and bounding; the face flushed; the tongue white and loaded; the urine scanty and loaded with a sediment resembling brick-dust; and the patient is drenched in a profuse perspiration, of a peculiar and sour odour. The joints are excessively painful, and, at the same time, tender, so that even the pressure of the bed-clothes cannot be borne, and the

slightest motion causes acute agony. In some cases there is a good deal of swelling, and fluid is poured out into the cavity of the joint; in others, the effusion is less, and occupies the textures immediately under the skin, so that slight pits or depressions are left when pressure is made on the part with the points of the fingers. The pain is most severe during the night, remits slightly towards the morning, and is less intense during the day. When confined to the joints, rheumatism seldom occasions death; but it is very liable to extend to the heart, in which case it either proves rapidly fatal, or is liable to cause structural alterations, by which life is shortened. It must, therefore, be considered as a dangerous disease, and one which it is not safe to combat by domestic remedies. When medical assistance is absolutely inaccessible, the bowels should be kept freely open, but active purgation should be avoided, as it occasions much distress to the patient from the frequent necessity of moving in bed, and risk of exposure to cold. To a robust adult, five grains of calomel may be given at night, and some infusion of senna, with three or four drachms of Epsom salts in the morning; for the young or delicate, the doses must be diminished. During the day, bicarbonate of soda, or potash, may be given in half drachm doses, dissolved in water, every four hours; and as much lemon juice as the patient may desire may be taken as a beverage, with water and a little sugar. The room should be kept warm, but well ventilated, and exposure to cold should be carefully avoided. When the attack is not very severe, the patient may possibly be conducted through it in safety by some such plan of treatment; but, in general, more active measures are required. It must, however, never be forgotten that the affection of the heart is liable to occur in such an insidious manner, that the management of acute rheumatic cases should never be undertaken by non-professional persons, except under the most urgent circumstances.

There are two principal varieties of chronic rheumatism: in the one, the joints are chiefly affected, and are liable to become red, hot, and swollen; in such cases, the pains are generally most severe when the patient becomes warm in bed, and are increased by hot applications. In the other variety, the muscles are the chief seat of the disease, the pain is of a dull aching character, the part feels stiff and cold, and warmth is agreeable. Those who are liable to chronic rheumatism are particularly susceptible to atmospheric changes, and suffer most during cold and damp weather; during the prevalence of northerly or easterly winds; or, generally, on any sudden change from

hot to cold, or from dry to moist. During the summer months, the pains often altogether cease.

The immense number of drugs and specifics which has been recommended for the cure of chronic rheumatism is of itself sufficient evidence of the intractability of the disease; some of these are too powerful in their effects to be meddled with incautiously; but considerable relief may sometimes be obtained from some of the more simple. One of the most popular of these is sulphur, which forms the basis of several nostrums, and which is sometimes of undoubted service, especially in muscular rheumatism; a teaspoonful, with powdered ginger, may be taken every night at bed-time, in a little milk; or those who prefer a more complex prescription may adopt the following, recommended by Dr. Graves:—Powdered bark, powdered guiacum, powdered ginger, of each one drachm; cream of tartar, one ounce; flour of sulphur, half an ounce; to be made with syrup into an electuary, of which a tea-spoonful may be taken twice or three times a-day, according to its effects upon the bowels. Of lemon juice, a remedy which, recently introduced by Dr. O. Rees, of Guy's Hospital, has been strongly recommended, half a wine-glassful may be taken several times a-day. Cod-liver oil was at one time much employed in chronic rheumatism, and has occasionally effected much good, especially in shattered constitutions; a teaspoonful may be taken three times a-day to begin with, and this may be gradually increased to a table-spoonful for a dose. It is less liable to excite sickness if taken soon after a meal; it may be taken alone, or floating on milk, coffee, or ginger wine; or it may be poured over half a slice of toast, and seasoned with salt and pepper. Local applications must vary in their nature according to the symptoms. If there be much heat and swelling, a lotion, composed of a drachm of sugar of lead and a scruple of powdered opium, dissolved in a pint of boiling water, may be applied warm, by means of a few folds of linen, or a piece of spongio-piline. In other cases, a thick layer of carded cotton, secured by a bandage, will be more agreeable. Where coldness and stiffness are the characteristic symptoms, stimulating liniments may be used. One ounce of spirits of hartshorn, two of olive oil, and half an ounce of laudanum, or the compound camphor, or compound soap liniments with the addition of a drachm of laudanum to each ounce, are useful combinations. When the skin is thick and insensible, half a drachm of tincture of cantharides may be added to each ounce of the liniments. Vapour, hot air, or hot salt-water baths or *douches*, each possess peculiar advantages in certain cases; the salt-water bath may

be prepared by adding a quarter of a pound of common salt to each gallon of water.

It is a point of great importance to rheumatic subjects to defend themselves against atmospheric changes. The susceptibility to cold may be much diminished by using the cold shower, or sponge bath every morning, but this is adapted only for the robust, and should always be commenced in warm weather. The horse-hair glove, vigorously employed morning and evening, is an admirable means of promoting the healthy action of the skin, and, conjoined with an occasional tepid bath, may be used with safety by the most delicate. Flannel should be worn next the skin, not only for warmth, but to absorb the perspiration, which, even in the coldest weather, is secreted from the surface of the body; this is equally necessary during summer as during winter, as the perspiration is then more abundant, and renders a linen garment damp and chill; the thinnest flannel that can be procured, or the fine woollen gauze manufactured for India, may be used during hot weather by those who suffer from the heat. The diet should be light and nutritious; animal food should be taken rather sparingly; and, as a general rule, malt liquors should be avoided. A glass of spirits is sometimes taken by those who are necessarily exposed to the cold, to fortify themselves against its effects; this is a mistake, spirits produce merely a temporary stimulus which rapidly fades, and leaves the body more susceptible to cold than before; a cup of warm coffee will be found much more useful and enduring in its effects.

Plethora, or Fullness of Blood: that is, the blood being greater in quantity than is required for the waste and repair of the general system. This affection may be occasioned by gluttony—that is, eating and drinking to excess; by luxurious habits; by indolence; by inactivity; by sedentary pursuits immediately following those which involve great exercise; by anything which checks secretion, as cold; sudden cessation of habitual discharges, as those which accompany old ulcers, hœmorrhage from the nose, &c., &c. It sometimes accompanies pregnancy. Its symptoms are, general fullness of body; redness of the face and skin; palpitation of the heart and difficulty of breathing, particularly after any slight exertion; cold extremities; frequent sighing; much debility and; constipation.

The indication of cure is to remove the cause, and diminish the formation of blood; the latter being best effected by the free exhibition of saline purgatives, restricting the patient to a strictly vegetable diet, enforcing exercise, cool rooms, and sleeping upon hard

mattresses. Friction to the surface, and occasional warm baths, are very useful. When plethora is so great as to threaten apoplexy, the medical man will determine the necessity of bleeding; but this is an extreme case, the patient being generally relieved by exercise and by diet being properly regulated.

Anæmia is the opposite of plethora. Here the nutritive constituents of the blood are not in their regular proportion, the red particles in particular being deficient—a cut, or pricked finger, hardly staining a handkerchief. Anæmia may be acute, as after excessive loss of blood; or it may be chronic, when it is generally known as *chlorosis*, or green sickness. It is generally supposed to be confined to young women, but this is not the case. Neither is it essentially a disease of the female sex; males, particularly those of a delicate constitution, being liable to its attacks. The symptoms are well marked, and the experienced medical man may detect its presence without any particular examination. He sees it at once. Shakspere has well described it, from the appearance of the countenance, as "a green and yellow melancholy." The gums and membrane of the mouth are unusually pale; the tongue often white; the hands and feet are cold; excessive debility and an unwillingness for exertion exist; fainting and other hysterical symptoms present themselves; the secretions are scanty, the periodic discharges being altogether suppressed, or slight and pale; the appetite is capricious, and the temper often irascible. The nervous system may be involved, and wandering neuralgic pains frequently harass and distress the patient.

The object of treatment is to restore the healthy condition of the blood. Here medical art is most triumphant; and a knowledge of physiology at once leads to the method of cure. We give iron, and its effects upon the constitution of the blood is most astonishing, its red particles rapidly increasing under the operation of the drug. Three grains of the sulphate of iron, taken three times a-day, soon restores colour to the cheeks; and, under its influence, a copious supply of well-conditioned blood is obtained, the constitution invigorated, the secretions improved, and health restored: particularly when its effects are promoted by careful attention to diet, moderate exercise in the open air—on horseback, if practicable—sleeping in a well-ventilated room, and wearing flannel next the skin—worsted stockings and thick shoes, however unsightly, being indispensable.

Scurvy and Purpura.—Of these it is hardly necessary here to speak. They are, however, both diseases depending upon depravity of

the blood: the first supposed—with what truth I will not now consider—to owe its origin to a diet consisting entirely of salted food; and the second, to circumstances of a debilitating nature which impair the blood, such as scanty and unwholesome food, deficient clothing, and impure air. Not, however, that purpura does not sometimes appear in persons of good constitution, exempt from poverty and all the evils of privation. I do not think it probable that scurvy will occur in the families of those for whom I chiefly write; for it is now a very rare disease, and only arises during long voyages, and on board ships insufficiently provisioned. Scurvy can thus be traced to manifest causes; and it is not known to have attacked a man in health, accustomed to wholesome food, and subject to no morbid influence. Not so, however, with purpura, which sometimes occurs in an inexplicable manner. The two diseases, however, are very nearly allied, and have one great feature in common—internal bleeding. Scurvy is characterised by extreme debility; complexion pale and bloated; spongy gums; livid spots on the skin; offensive breath; foul ulcers, accompanied with hœmorrhages, and extremely offensive stools.—(*Hooper.*)

Of purpura, in its intense form, the symptoms are the same; livid spots of various sizes upon the skin, with hœmorrhage from various parts, as the gums, bowels, &c. The spots of purpura consist of effusion of blood under the cuticle, and "they are essentially different from every form of rash, or other cutaneous eruption, and are properly considered as the result of cutaneous hœmorrhage"—(*Goldie.*) A mild form of purpura is not uncommon among the very poor. The eruption is slight, and confined generally to the legs; the patches, after a few days, begin to fade, and new ones to appear. The general health is but little disturbed, and the disease generally passes off in a few days. It is, however, said sometimes to last for years. The treatment is obvious. Scurvy readily yields to a vegetable diet; and purpura to tonics, good food, cleanliness, and healthy ventilation. Turpentine in drachm doses has been much lauded in the latter affection.

CHAPTER XII.

DISEASES OF THE ORGANS OF DIGESTION.

I HAVE now to speak of the affections of the organs of digestion—that is, of the mouth and its appendages, the throat, stomach, intestines, mesenteric glands, liver, and gall-bladder; and these form the great majority of the "ills that flesh is heir to." And first of

THE TEETH, which plague us in the progress of their development, plague us in their prime, and plague us in their decay. Dentition is the most perilous phase of infant life; for the irritation which frequently accompanies it, may give rise to disease of alarming and even fatal character. A child begins to "breed its teeth" about the third or fourth month of infancy, and to "cut its teeth" when about six months old; and then a set of symptoms may be set up which require the most watchful care. The flow of saliva is increased, and the gums become hot, swollen, and painful. A natural instinct induces the infant to put its fingers in its mouth, or to press upon its gums any hard substance it can grasp. It is restless, fretful, and feverish, refuses food, and starts and moans in its sleep. Diarrhœa often occurs; skin diseases may appear; cough and inflammation of of the air passages may come on; and spasm of the glottis, convulsions, and water on the brain, may cut off the flower ere bursting into bloom. Upon how many an early tomb, from teething, might this epitaph be placed:—

> "Attigit hic labris vitæ carchesia, amaror
> Torquet et ora, haustus abnegat et reliquos!"
>
> "The cup of life just to its lips it pressed,
> Found the taste bitter, and declined the rest!"

The diarrhœa of teething, however, is often critical; that is to say, it relieves the local irritation, and if slight, need not be arrested. The medical attendant, and even an experienced nurse, will check it if excessive, by a little magnesia, or prepared chalk; while, if the stools are dark and fetid, or pale, or slimy, a little grey powder will generally correct the vitiated secretion. The lancet must not in general be used unless the teeth are near the surface; although in some cases where the membranous capsule in which they are contained is very tough, and gives rise to great irritation, free section of the gum is attended with the happiest results. But by all means let the prudent mother avoid the use of "soothing syrups," "anodyne

lotions," and other abominations. Opium in some form is the basis of all these so-called "mother's friends," but in truth her bitterest enemy. They may save much trouble, and enable a nurse to sleep undisturbed by a fretful child; but they sow the seeds of greater evils, and often lead to a premature grave. If anodynes are necessary, and it is not often that they are—they must only be administered by the medical man, and never entrusted to the discretion of a nurse. The warm bath is very beneficial during dentition; and since, at this period, there is considerable determination of blood to the head, caps should be discarded, and frequent ablutions with cold water persisted in. In no period of life than in infancy, is it more necessary to "keep the feet warm and the head cool;" nevertheless, eruptions which appear behind the ears, although unsightly, should be very cautiously interfered with—indeed, some physicians imitate them, as counter-irritants, by keeping blisters open in the same situation.

In youth, when the first teeth are being shed, and the second, or permanent set appear, it is necessary to consult an experienced dentist; for now care and frequent supervision may prevent much future deformity.

Inflammation of the Gums is not always the result of dentition, or confined to infancy and to youth. It attacks the adult, when it is generally the result of cold. It usually passes off with warm local ablutions, the exhibition of purgatives and spare diet; but it sometimes terminates in suppuration, matter collecting about the teeth and the gum, and involving the bone. The discharge is often of long continuance, and only to be stopped by removing the tooth.

Toothache.—Toothache may arise from uncleanliness, cold, indigestion, neuralgia, hysteria, decay, or the growth of bony matter. As regards the first, the brush and powder are effectual remedies; although it is sometimes necessary to employ the dentist to remove the "tartar" and mouldiness that has been allowed to be deposited. Cold is a frequent cause of toothache, and may be generally traced to a small hole, or carious opening, communicating with the cavity of the tooth. There are many means of relieving pain from this cause—by the local application of opium, musk, cloves, chloroform, &c.; by masticating aromatic plants; by blisters behind the ear, and rubifacients to the cheek. The more effectual remedy is to "stop" the tooth; and, as soon as pain has ceased, the dentist is to be resorted to for that purpose. In toothache, from indigestion, neuralgia, and hysteria, the best remedy I believe to be an emetic; except in pregnancy, which it frequently accompanies, and when it may be

often relieved by a small dose of rhubarb and magnesia. In toothache from decay or bony deposits, the aid of the dentist is to be invoked. Writers speak of gouty and rheumatic toothache; but they mean nothing more than the complaint occurring in persons of gouty and rheumatic habits; and even then it can generally be traced to cold. When teeth become loose, as they often do after inflammation of the gums, and in which case abscesses often form at their base, and separate them from the socket, they had better be removed, and their places supplied.

Inflammation of the Mouth.—Systematic writers recognise six species of *stomatitis*:—1, the erythematous; 2, the membranous, or millet; 3, the follicular, or aphthous (the thrush); 4, the ulcerated, or "sore mouth;" 5, the gangrenous, or "canker;" and 6, the mercurial. The first is very slight and inconsiderable; it accompanies dentition, and may be considered as simple inflammation of the gums (see page 74).

Membranous Inflammation, or Millet, is common to all ages; it is generally the result of some indiscretion of diet, and shows itself as a slight abrasion on the inside of the lips, or upon the tongue, very similar in size or shape to a millet or canary seed. It readily yields to cooling saline aperients, and the local application of a caustic lotion, of two grains to an ounce of distilled water. The third variety demands more consideration: it is

Aphtha, or Thrush, and consists of an eruption of small white specks, single or confluent, on the tongue, lips, cheeks, gums, uvula, palate, and tonsils. They usually soften in the centre and discharge a glutinous mucus, which forms a thick white crust, adhering at first most tenaciously, but at length falling off without leaving an eschar beneath. There is often difficulty in deglutition and respiration, and the disease may extend throughout the whole length of the intestinal tube. Thrush is common in early infancy; but is found at all ages. The child at the commencement of the disease is fretful, disinclined to food, and feverish. The motions are depraved, the mouth hot and tender, and the nurse's nipples often chapped from contact of the infant's mouth. In slight cases there is little or no constitutional disturbances, and the aphthæ fall off in a few hours. In others, again, the disease runs on to gangrene, and may become fatal.

Professor Jenner, of University College, one of the physicians to the Children's Hospital, has abundantly shown aphtha to be of vegetable origin, and a fungus growing upon the part affected—the mucous membrane of the mouth being in a state of low vitality, offering an

appropriate nidus for its development. Dr. Jenner has also shown a specific mode of cure by the application of sulphurous acid gas, which immediately destroys all vegetable existences. The gas itself, in solution, is, however, too strong for this purpose; and here Dr. Jenner's scientific acumen and ingenuity overcame a serious difficulty. He applies to the growth a solution of the sulphite of potass—a drachm to six ounces of water, with equal effect. The rationale of this plan is, that the acid of the mouth decomposing the salt, sulphurous acid gas is produced, and the growth destroyed by it; but when I come to speak of certain forms of stomach complaint and of ringworm, I shall have occasion to allude more fully to the subject.

When aphtha is slight, the specks upon the mouth soon yield to the application of any detergent wash, such as vinegar and water, or borax and honey. When, however, symptoms run high, there is much fever and constitutional disturbance, or the child of a bad habit of body, more energetic means must be used and the medical man consulted; since the local affection, if unchecked, is likely to pass into ulceration. In thrush we generally find much acidity of the stomach; and antacids may be exhibited with great success. A very good form is two parts of the compound chalk powder, two parts of carbonate of soda, and one part of grey powder, of which three to six grains may be given two or three times a-day. When aphthæ appear during chronic disease of long standing, they must be regarded as indicative of an approaching fatal termination. I know no more fatal sign of Death being about to claim his victim.

Ulcerated or "Sore Mouth" is a very common disease among the children of the poor. It often involves the gums, cheeks, and tongue, which are of a "raw red" colour; the glands of the face and neck are swollen; the breath fetid; and the general health much disturbed. The ulcers are very indolent, but spread, and often lay bare the jaws. "Sore mouth" is caused by cold, or by dentition, in highly debilitated and ill-fed infants. Luckily we possess a cure; and I would almost add that a specific exists in the chlorate of potass. A lotion of two scruples of the salt to an ounce of water, frequently applied by a brush to the sores, rapidly removes them; and if attention be paid to the general health a speedy cure is effected.

Gangrene or Canker is a rare and very dreadful disease, and quite beyond domestic management. It is sufficient here to describe it as a very severe variety or last stage of the ulcerated or sore mouth. The ulcerations are dark and livid; sloughing makes rapid progress,

and soon involves the cheeks, lips, gums, and sometimes the nostrils, eyelids, neck and throat; the teeth fall out, the jaw-bones, and even those of the head may be attacked. And with all this there is often but comparatively little fever and constitutional disturbance; and the child will run about and play till a short period before death, which is ushered in by exhaustion and collapse. It attacks children from a year to twelve years of age. Its causes are, as in other varieties of stomatitis, improper or insufficient diet, impure air, and the damp and dirty dwellings of the poor. Its treatment must be most energetic. Most powerful stimulants of caustics, and mineral acids, may be necessary. Pure air, cleanliness, and nourishing diet, are indispensable, as are also quinine and ammonia. It is in this way that the rich may greatly assist the medical man, by placing at his disposal the means of administering to the necessities of the poor and needy; and thus, if not always snatching them from death, at least soothing their passage to the grave.

Mercurial Inflammation, Ptyalism, or Salivation, which is at once recognised by the peculiarly offensive smell with which it is always accompanied, is best treated, when slight, by frequent acidulated gargles of barley-water, or a solution of chlorate of soda, so diluted as not to produce more than a slight smarting of the mouth, free ventilation, and exposure to the air. If very severe the application of caustic may be necessary—half a drachm of the nitrate of silver dissolved in an ounce of distilled water, and frequently applied by a brush to the ulcerated surface. Saline aperients, as Seidlitz powders, light diet, a cool atmosphere, and *free* ventilation, are indispensable in either case.

Quinsey, or inflammation of the tonsils, is not an unfrequent sequence to common sore throat. Its presence is first indicated by uneasiness and pain, which soon pass into difficulty in swallowing, which rapidly increases, until it becomes impracticable, every attempt at deglutition being attended with convulsive muscular action, and the regurgitation of fluids through the nostrils. The voice is sometimes lost, and the hearing impaired. If the tonsils are greatly swollen, respiration may be impeded, and suffocation threatened. Fever often runs high; the pulse strong and full; headache considerable, and the patient restless; the constant flow of viscid saliva from the mouth being very annoying. The countenance is sunken; the extremities cold and clammy; the breath fetid. At this stage, the suffering is very great; but now the abscess bursts, the patient is at once relieved, and the recovery rapid. This is usually the course of quinsey;

but sometimes it does not proceed to suppuration, and passes off as a common sore throat. As regards treatment, little is to be said; I believe an emetic in the early stage will often stop the disease. External remedies, as leeches, poultices, blisters, &c., are of little or no avail; but sometimes urgent symptoms may render it necessary to open the abscess internally from the mouth, if that be possible, or externally through the neck. The surgeon must take charge of the case. Astringent gargles, or the inhalation of hot vapour, when the patient can use them, give relief.

Quinsey is apt to return, and also leaves the tonsil in a state of chronic enlargement. Here scarification, and the daily application of caustic, are useful. Sometimes it is necessary to remove the tonsil altogether, for which purpose an ingenious instrument has been invented.

Bronchonchle, or Goitre, may be here conveniently described, although the thyroid gland of the neck, an enlargement of which constitutes the disease, is not ascertained to be concerned in the function of digestion; indeed, its use is unknown. It is situated before the trachea, or windpipe, under the chin, on the front of the neck. It gradually enlarges, until it sometimes attains a very considerable size, extending round the neck, upwards to the jaws, and sometimes hangs pendulous over the chest. It is said to be confined to females; but in Switzerland, and some parts of Germany, I have seen men and boys suffering from the disease. In the Swiss valleys, it is generally found combined with idiotism. It is supposed to be caused by bad water and deficient ventilation. In some localities, it is certainly endemic; but its causes are not sufficiently ascertained. As regards treatment, it is almost entirely confined to the use of iodine, externally in the form of ointment, and internally as the hydriodate of potassa, four or five grains of which may be taken two or three times a-day. Surgical assistance is sometimes necessary.

I do not allude to the diseases of the gullet, as stricture, cancer, &c., such being quite beyond domestic management; and at once I pass to the consideration of

Mumps—a disease propagated by contagion. Writers describe it as inflammation of the parotid—one of the salivary glands; but from the fact that mumps, whatever may be its nature, sometimes suddenly quits the parotid, and flies to another gland, or to the heart, there is much doubt if it be essentially an inflammatory affection. Mumps, also, is sometimes translated to the brain, in which case it is attended with great danger; but, generally speaking, it gives rise to

little anxiety, reaching its height in two or three days, and disappearing about the seventh, under the influence of warmth, mild aperients, and spare diet. Dr. John Scott, of Boulogne, a physician of much experience, puts great faith in the use of tartrate of antimony in nauseating doses—two grains dissolved in a quart of water, and a wineglassful taken every hour until nausea occurs, which is to be kept up by smaller doses. I have seen Dr. Scott so treat patients, and certainly the method seemed very soon to cut short this annoying complaint.

Dyspepsia.—There is no organ of the human body which meets with such systematic ill treatment as the stomach. Let any one, at the close of a good Christmas dinner, where knife, fork, and spoon have done their work, and the bottle has commenced its rounds, suspend for an instant his more agreeable occupations, and endeavour to sum up the ingredients of the heterogeneous mixture which, during the last hour, has gradually passed the portal of his lips—solid and fluid, sweet and sour, bland and pungent—all thrust indiscriminately upon that much-enduring bag, which is expected to dispose of the chaotic mass, and again to be prepared for fresh labours, probably within the lapse of a few hours. Can it be a matter of surprise that the overtasked drudge occasionally sinks from sheer exhaustion? Is it not rather wonderful that the punishment of such a violation of the laws of nature should ever be deferred?

The following observations, though intended principally for the guidance of those who suffer from habitual indigestion, are not unworthy the attention of those who have hitherto escaped, and if acted upon in their general principles, may tend to a continuance of their immunity from suffering.

Many slight cases of dyspepsia may be cured by carefully regulated diet alone, without the assistance of drugs, which, even in severe cases, must be considered merely as subsidiary to the general treatment. Bearing in mind that the stomach is enfeebled by previous mismanagement, it will be obvious that error, either in the quantity or quality of the food, will overtask its powers. The first error is best avoided by eating slowly; by stopping short of complete cessation of the appetite; and, farther, by allowing a sufficient interval to elapse between the meals. This interval will vary according to the extent of digestive power which remains, but will be found to average about four hours. The food should be of such a nature as to be capable of conversion into the constituents of the body with the least possible expenditure of vital energy; animal food is thus obviously pointed out, but as it has been found that since a certain amount of bulk

facilitates the operations of the stomach, it is necessary to add an admixture of vegetable matter; and as this is, in many instances, difficult of reduction, its selection demands much care and attention. Stale bread, toasted biscuit, tapioca, rice, and similar articles, offer a considerable choice, and a well-boiled potato will sometimes be conveniently disposed of by those who in health have been accustomed to the free use of vegetables; but those who allow themselves much greater latitude than is here indicated, will generally pay the penalty of an attack of flatulence. It is a rule of the utmost importance that the food should be thoroughly masticated before being swallowed, so that it may be presented to the stomach in a state of minute subdivision, and impregnated throughout with the juices which are supplied for the purpose by appropriate glands. Neglect of this precaution is a fruitful source of indigestion, as is illustrated on a large scale in the boarding-houses of America, where the meals are dispatched with a celerity which excites the astonishment of the less "go-ahead" natives of other countries. It is another very common error to distend the stomach, especially at breakfast and dinner, with a large quantity of fluid, a practice which interferes materially with healthy digestion, by diluting the solvent secretions of the organ. As a general rule, one breakfast-cupful of milk and water or weak tea, will be sufficient for breakfast, and an equal quantity, or a moderate-sized tumbler of water, for dinner. Wine, or fermented liquors, are admissible only in small quantities, and in cases where there is much debility; of the former, sherry is generally to be preferred, and should be taken diluted with water; of the latter, Allsopp's pale ale is the best. The meals should never be taken when the body is exhausted by exercise; fatigue should first be allowed to subside by rest, and by the refreshing influence of cold ablution; active exercise should also be avoided immediately after a meal, and this is particularly requisite in those cases in which the pain or uneasiness do not appear until a considerable time after eating. Every effort should be made to regulate the bowels by slight variations in the diet, by regular habits, and by friction of the abdomen and whole surface of the body, morning and evening, with the horsehair glove. The habitual use of powerful aperient medicine has done incalculable mischief; when, however, an aperient is imperatively required, the compound rhubarb pill, or equal parts of compound extract of colocynth and extract of henbane, made into five-grain pills, will operate easily and effectually; one or two of these may be taken for a dose. Tonic medicines require some care and judgment in their administration,

and, as a general rule, are inadmissible when the tongue is foul and loaded. One of the most simple and generally useful, is infusion of calumba, which may be prepared by pouring a pint of boiling water upon half an ounce of the coarsely-powdered root, and filtering it when cold. Half a wine-glassful of this may be taken two or three times a day, about half an hour before meals. The more powerful tonics, such as quinine, the preparations of iron, &c., should not be used without medical advice.

After these general views of indigestion, it will be well to enter a little into particulars, and first of

Inflammation of the Stomach.—The stomach is a most enduring and forbearing organ, and will suffer a great deal of persecution before active inflammation occurs; indeed the disease, in its acute form, is rarely seen, except as the result of an irritant poison having been swallowed, and then the only means of treatment is to remove the offending matter, or to neutralize it by antidotes. As regards the first indication, the exhibition of an emetic, and the use of the stomach-pump, readily suggest themselves. The first is of easy application, and a dessert-spoonful of mustard in a tumbler of warm water, every household will afford, until the arrival of the medical man, the application of whose art will be greatly assisted by a little common sense and coolness on the part of the lookers-on. And here, perhaps, I can most conveniently classify the poisons which are commonly resorted to for the purpose of suicide or taken by accident; and having enumerated the most marked symptoms, briefly state the antidotes which are to be employed.

Concerning the symptoms of poison having been swallowed, these, as regards the acids, are sour, acrid taste, and burning in the throat, increased by pressure, swallowing, and coughing; excruciating pain in the stomach; corrugation of the lining membrane of the mouth, and excoriation of the lips and such parts of the skin as the acid may have touched. The vomited matter violently effervesces with carbonate of lime; the countenance is glazed; the hands and feet cold; convulsions generally take place, and death follows.

Where arsenic has been taken, violent burning pain and great tenderness of the stomach soon come on; retching, vomiting, and a sense of constriction about the throat; thirst, hoarseness, and difficulty of speech; the matter vomited is greenish or yellowish; there is diarrhœa and suppression of urine; convulsions; cramps; clammy sweats; collapsed countenance, delirium, and death.

With copper the symptoms are much the same; there is also a

coppery taste in the mouth; and palsy and insensibility generally terminates the case.

With corrosive sublimate (mercury), there are all the symptoms of violent irritant poisoning; harsh metallic astringent taste in the mouth; burning pain in the stomach; vomiting and purging, frequently, of bloody matters; suppression of urine; tightness of the throat; countenance not always pale, but sometimes flushed; tendency to dose; convulsions, and death.

In lead poisoning, the symptoms are more of a nervous nature, there being spasm and paralysis, either partial or complete; rigidity of abdominal muscles, and cramps. If relief be not obtained, these symptoms are followed by giddiness, torpor, and death. When lead has been taken for some time in small doses, there are violent colic and obstinate constipation, while paralysis generally affects the upper extremities, as in the "dropped hands" of painters, or those who habitually use water contaminated with the metal.

Among vegetable poisons, the more common are monkshood, false mushrooms, deadly nightshade, hemlock, meadow saffron, foxglove, tobacco, poppy, yewberry, and hellebore; and the symptoms of these having been taken into the stomach, are stupor, numbness, heaviness in the head; nausea, which soon advances to incessant vomiting; a sort of intoxicated and stupid air; dilated pupil; delirium; and, if unrelieved, death.

Among animal poisons received into the stomach, certain kinds of fish, in some constitutions, occasion very annoying symptoms, which have, in some instances, terminated fatally. An hour or two after the fish has been eaten, slight vertigo, and headache come on, with great heat about the head, thirst, and generally nettle-rash of a very irritating character. Mussels will often occasion these symptoms, and they have been supposed to be traced to oysters which have been dredged from beds containing copper. Some persons, also, cannot eat lobsters without suffering from symptoms of poisoning; but these are generally slight, and soon pass off.

I will now describe what is to be done in all these cases of poisoning, premising, however, that my remarks are intended only for those who cannot obtain medical aid—a circumstance so rare in this country, that those who, trusting to their own knowledge, neglected, *in all cases of poisoning*, to send for the doctor, would, in all probability, in the event of a fatal result, have to answer for their conduct to the coroner. And first, of the acids—and many instances are recorded, where children have swallowed a preparation of oil of

vitriol, kept by housemaids for cleaning grates. Here, however, and indeed, with the other acids, the result is generally fatal, from the chemical and corroding effects upon the parts with which the acid comes in contact. In cases where the muriatic, sulphuric, nitric, or oxalic acids have been swallowed, the antidotes are the carbonates of lime or magnesia, which may be used indiscriminately. When prussic acid, oil of bitter almonds, or laurel water have been used, we must give ammonia or sal volatile, in water, in repeated doses, and rouse the nervous system by the sudden application of cold. Thus, an animal, from which life has seemingly been dashed out, as it were, by these powerful agents, and which, left to itself, would resume no sign of life, if sluiced, or *douched*, with cold water, will gasp again, and exhibit signs of animation, and finally roll back into existence.

As regards the metals, I need not extend my remarks further than cases of poisoning by arsenic, copperas, mercury, and sugar of lead, in which, and, indeed, as a general rule, in all, emetics must be administered; for it is often easier to get rid by that means of a poison than to neutralize it by antidotes. In arsenical poisonings, moreover, we must administer the hydrated peroxide of iron diffused through water; or the precipitated carbonate; or the *rubigo ferri* every five or ten minutes, until relief is obtained; while the violent pain in the stomach may be mitigated by fomentations and stimulating liniments. Corrosive sublimate is the drug with which poisoning is sometimes attempted; and here, as with other forms of mercury, introduced into the system in poisonous doses, we must have recourse to albumen, in the form of white of egg beaten up with milk, or wheaten flour, as a gruel. In poisoning with copperas or blue vitriol, the same treatment is to be followed. In poisoning by sugar of lead, sulphate of magnesia and phosphate of soda are our antidotes. The theory of all this is, that, by our antidotes, we do away with the poisonous nature of the drug swallowed, by altering its chemical character, and, by the union of the two, produce a third substance, which is inert.

The treatment in cases of poisoning by vegetable and animal substances is extremely simple. The stomach is to be effectually evacuated by giving four or five grains of tartar emetic, or from ten to twenty of the sulphate of zinc, repeated every quarter of an hour till the full effect is produced. In the absence of these emetics, a dessert-spoonful of mustard in a tumbler of warm water may be substituted, and the means may be assisted by tickling the throat with a feather or the finger. Large and strong glysters of soap dissolved

in water, or of salt and gruel, should be speedily administered to clear the bowels, and assist in getting rid of the poison; and active purgatives may be given after vomiting has ceased. When the poison has been expelled, the patient may drink alternately a teacup of hot and strong coffee, and vinegar diluted with water. If the drowsiness, which is sometimes extreme, and the insensibility bordering on apoplexy, be not remedied by these means, blood must be drawn from a vein, blisters applied to the neck and legs, and the attention aroused by every possible means. The patient must not be allowed to sleep; he must be resolutely walked about, and warm frictions to the surface perseveringly used. It may be objected that, in treating in this place of poisons, I have somewhat departed from the strict method of arrangement to which, in all other parts of this treatise, I adhere. It may be so; but I have never yet seen a classification of poisons that was not open to objection, and toxicological matters which have not been pressed into places which did not properly belong to them. I am contented, then, to treat of poisoning among the diseases of the organs of digestion; and now pass to the consideration of

Irritation of the Stomach.—This may arise from congestion of the liver, from indigestible food, from gout or rheumatism, sympathy with other parts of the body that may be diseased, or from pregnancy. In the first case, we have a sense of fullness about the organ which may even amount to pain. The appetite is impaired, the tongue furred, the stools of a pale colour from a deficiency of bile, and the countenance sallow from the bile circulating with the blood, instead of mixing with the food for the purposes of digestion. This state often precedes fevers; but it may generally be cut short by the exhibition of a full dose of the compound colocynth pill and calomel—say eight grains of the first, and four of the latter at bed-time. In smaller doses this should be repeated until darker stools and a more natural complexion indicate that the liver has resumed its proper action. Gouty and rheumatic affections of the stomach are generally recognised by the suddenness of their appearance and in reference to the primary disorder. They are merely symptoms, and are generally relieved by mustard poultices and antispasmodics, such as a tea-spoonful of sal volatile, or five grains of carbonate of ammonia, as a draught. As regards the sympathetic affections which the stomach exhibits with many, indeed, with most affections of remote organs, there is little further to say than that they are removable with the cause upon which they depend. They are not diseases, but symptoms of diseases,

and generally of those which come more immediately under the care of the medical man. They are sometimes called gastralgia and gastrodynia; they may be nervous, and depend upon nervous affections and diseases of the brain or spinal chord. Anæmia is a common cause; so is inordinate smoking, and excess in eating and drinking, luxury, late hours, and crowded rooms; dissipation of all sorts will occasion them; and they may be regarded as warnings to many to have regard to their ways before it is too late to repair them. In the latter case, the best mode of treatment is a change of scene and habit. Travel, and resorting for a few weeks to a chalybeate, will generally put matters in a train for cure, which it must depend upon the patient himself permanently to effect. The irritable stomach of pregnant women is purely sympathetic. It may generally be relieved by a mild carminative draught; and the best is composed of a dozen grains of magnesia, with a teaspoonful of sal volatile and as much compound tincture of cardamons or lavender in a wine glass of water.

Pyrosis, or Water Brash, is another affection of the stomach generally induced by some bad habit, either as regards food or regimen. It is common in Scotland and Ireland among the poor and ill-fed, with whom oatmeal and potatoes are the general diet, and much whisky is used. In cyder counties, too, it abounds. It is found also among clerks and men in business, who hastily swallow their dinner and again hurry to the desk or counting-house. Literary men, whose habits are sedentary, are liable to it; and according to some authorities, it may be brought on by cold applied to the lower extremities or by any considerable emotion of the mind. It occurs in paroxyisms. There is pain at the stomach, increased in the erect posture. This is often severe, and gradually increases until eructation occurs, and a quantity of tasteless water-like fluid is discharged from the stomach, much to the patient's relief. I have generally found that a slight course of nitrate of silver, the fourth of a grain, as a pill, three times a-day on an empty stomach, with great care in diet, will effect a cure. But this mineral must not be used except under medical advice, as many cases are upon record where its undue exhibition has permanently blued the whole skin. Nitrate of bismuth, too, is a useful remedy, in doses of five grains two or three times a-day in mucilage; but, without a change of diet and regimen, a cure will rarely be effected.

Spasm, or Cramp of the Stomach, may depend upon the presence of indigestible food. It may also arise from the regurgitation of bile; or from wind; or from congestion of the liver; gout; rheumatism; or

cold water or ice, taken when the body is overheated. Hysterical people are subject to it; and any slight excitement will give rise to it in those liable to its attacks. It must be treated according to its cause; and whatever this may be, an emetic will, in most cases, give great relief.

NAUSEA AND VOMITING will, in a great measure, be understood from the preceeding remarks; but their phenomena require further elucidation. Vomiting is an act entirely dependent upon sensation, and takes place under a variety of circumstances, such as sympathy, the introduction of certain substances into the stomach, tickling the throat with a feather, &c. But vomiting does not consist of a mere contraction of the stomach; nay, in perfect vomiting, the stomach itself is passive, while a multitude of muscular organs are called into activity. And how are these called into action? It is an established rule in the animal economy, that as often as a certain sensation originating in a peculiar stimulus arises, it is succeeded by a definite number of muscular organs being called into action, and producing the evacuation of the stomach. Perfect vomiting is produced in the following manner:—The diaphragm, or midriff, which is in contact with the upper surface of the stomach, by the powerful contraction of its muscular fibres, descends, and remains for a moment fixed in this position, while the muscles which shut up the aperture of the windpipe, and those of the abdomen, act with a simultaneous and convulsive effort; so that the air being retained in the lungs, the ordinary effect of the action of the abdominal muscles, namely, the expulsion of the air from the lungs, by the diminution of the chest, is prevented, and the whole force of these powerful instruments is made to bear upon the stomach, still pressed upon from above by the diaphragm, and thus the organ is evacuated instead of the lungs. If the brain is in a state of lesion, or of deep stupor, vomiting cannot occur; and it has been found that vomiting was immediately put a stop to by compressing the upper part of the spinal chord. It is thus seen that nervous influence is necessary to vomiting; and it is thus easily understood how often nausea and vomiting depend upon affections of the brain. We have seen how vomiting accompanies affections of the stomach, and now must understand how also it may depend upon those of other organs. But the immediate cause of vomiting, with which we have now to do, is the sensation caused by irritation of the stomach, either from disease of that organ, or from foreign bodies held within it. In the former case, it is to be treated upon the general principle we have laid down; the organ must be soothed;

and if the affection does not immediately yield to familiar domestic remedies, the physician must be consulted. In the latter case, the foreign and obnoxious body must be removed; and here again the same rule must be enforced, and the physician consulted, by all those who would not trifle with themselves, and by an unwarrantable delay foster, perhaps, a trifling spark into a mighty and consuming flame. Now, foreign and obnoxious bodies may be of two kinds: those introduced into the stomach, as deleterious food, or other inorganic and dead matters; and those organic and living matters which grow and move, and have their being within the organ itself. The moralist has asserted, and truly said,—

"Man lives not for himself alone;"

and the apothegm is clearly, but painfully, proved by the fact, that his lungs afford an abiding place to one living being, and his digestive organs to six distinct families; his skin; his eye; his hair; his muscles; his stomach; his very veins—all are inhabited. He is preyed upon from without; and he is preyed upon from within. On all sides parasites attack him; one set feeds upon his worldly substance, another literally sucks his very blood. But our present purpose is alone with those whose local habitation is his stomach. Upon their origin, I will not now linger, but content myself by referring the curious reader to Mr. Kirby's remarks upon the first creation of parasites in his "Bridgewater Treatise," vol. i. p. 12. The living inhabitants of the stomach are of two kinds, animal and vegetable. The first, I am inclined to consider as mere foreigners—travellers who have wandered thither from other regions—cosmopolites, who would have remained there if they could; but, becoming obnoxious to the neighbourhood, have taken their departure by a very summary process. But of these, many marvellous tales are told; and we hear of some whose benefactors have been absolutely worried out of house and home, and laid down their lives to those

"Their former bounty fed."

Dr. Picknell tells us of a young woman, whose stomach was a very lodging-house, or general repository, for apterous, dipterous, and coleopterous insects. "Not less than seven hundred," says he, "have been thrown up from the stomach at different times since the commencement of my attendance. A great proportion were destroyed from an anxiety to evade publicity; many, too, escaped immediately after having been vomited, by extricating themselves quickly from the vessel, and running into holes in the floor." Of worms in the

intestines, I shall have occasion to speak at some length; but as regards those of the stomach, should a case present itself, an effectual remedy exists in a table-spoonful of spirits of turpentine, which will soon destroy intruders, while an after emetic will effectually remove the emigrants from their self-selected colony.

The proper parasites of the stomach are of vegetable origin, at least I will presume so; for in such low organizations, so slight are the partitions that divide the animal from the vegetable kingdoms, that no one can positively assert to which they really belong. At any rate—and that is all with which we have now to do—they are subject to the same lethal influences which act upon all orders of plants. There is no prospect so dreary and so dark that has not some redeeming spot; no desert without its oasis; no moral wrong that may not be atoned. "Nemo miser est nisi comparatus"—no one is wretched but by comparison, said Seneca; and there is nothing so bad but something else by comparison is worse. Even cholera has its bright side, for it has taught us to purify the water which we drink; to ventilate the rooms in which we live; to erect the dwellings of our labouring population with some regard to sanitary laws, to build them well, and to drain them effectually; to see they are not over-crowded with human beings, and that they do not become unhealthy for want of space in which to conduct necessary domestic operations. Science may lament the weakness of curative medicine; but she rejoices in the knowledge that preventive measures do exist, and that the investigation of the cholera, so far from having been altogether unattended with satisfactory results, has led us to the knowledge of many things before mysterious or unknown. A singular episode in the history of cholera was the observation of Drs. Brittan and Swayne of the existence of peculiar microscopic bodies in the discharge; and which bodies were held by Dr. Budd to be some species of fungi. And although it was soon ascertained that mushrooms and cholera were not cause and effect, the suggestion led to very important results. Thus, when cholera was supposed to depend upon the presence of a fungus in the intestinal canal, Professor Graham proposed the exhibition of sulphurous acid in the disease, as the agent most destructive to vegetable life. And we are farther indebted to Dr. Jenner, of University College, for suggesting that the gas might be evolved in the human stomach with impunity, by administering sulphite of potash. This brings me to a not uncommon form of vomiting, which hitherto has proved most troublesome and intolerant of medical aid. It is obstinate, and of long continuance, and distinguished by the discharge

from the stomach of matter resembling yeast. Under the microscope, this matter is found to contain quantities of vegetable parasites; and Dr. Jenner greatly advanced the cause of medical science, when, in a clinical lecture, delivered at University College, and afterwards published in the "Medical Times" (Aug. 23, 1851), he showed, that under the use of sulphite of soda, in doses of a drachm three times a-day, the yeasty appearance of the vomited matter ceased, and the fungi were destroyed. I am very far from saying that all cases of obstinate vomiting depend upon vegetable growths within the stomach; but when the affection resists all usual appliances, it is well to ascertain the fact by the use of the microscope.

Sea-sickness.—Three causes have been assigned to this most painful affection, and all the result of the motion of the vessel,—the stomach and bowels rubbing against each other; a determination of blood to the brain; and a disturbance of the brain from the unusual impressions produced upon vision. The latter is the most probable; since sea-sickness is much alleviated, and generally altogether prevented, by the traveller laying quietly down and resolutely keeping the eyes shut. In long voyages, sea-sickness disappears as soon as the brain becomes accustomed to the unusual circumstances, an event much accelerated by a moderate diet and the use of acidulated and effervescing drinks.

Sick Headache is generally to be attributed to indigestion; it is sometimes caused by bodily or mental fatigue, or torpid liver. A drachm of magnesia, with a little ginger syrup and a teaspoonful of tincture of gentian in half a glass of soda water, will often given relief; or a tea-spoonful of sal volatile, with as much compound tincture of lavender, is useful. If the liver is disordered, a mild aperient is the remedy; or, what is better, a gentle emetic. A darkened room and bathing the forehead with eau-de-Cologne are useful; but when habitual, the cause must be referred to dyspepsia, and treated accordingly.

Inflammation of the Bowels requires the urgent care of the medical man; it seldom extends over the whole extent of the tube, and the portion affected is indicated by pain upon pressure over the part. If not early checked its progress is marked by swelling and tension of the abdomen; intolerance of the slightest pressure, even of that of the bed-clothes; nausea, vomiting, and constipation. In severe cases all these symptoms increase in intensity; there are also hiccup, irregular pulse, cold extremities, and great exhaustion. Cessation of pain indicates that nature is worn out and about to yield to

death. Its general causes are cold and local obstructions; and, in the absence of the medical man, it is best treated by a copious application of leeches—twenty or twenty-five—hot fomentations, and calomel and opium, three grains of the former and one of the latter—I speak of the adult—repeated every three or four hours, till the doctor arrives or symptoms abate. When the pain subsides a dose of castor-oil may be given. Enemata of warm water are useful.

Dysentery, which is inflammation of the mucous membrane of the large intestines, is generally imported into this country from warm climates. It presents all the symptoms of inflammation of the bowels, with the exception of constipation, and with the addition of discharges of bloody mucus, or of blood, or purulent matter. Straining and griping pains are very prominent symptoms, which is not the case in simple diarrhœa, which, however, precedes it. It is a very dangerous disease, especially in its chronic form, and is mostly complicated with serious structural disorganization. The slight and sporadic form of dysentery sometimes met with in this country generally yields to a dose or two of castor-oil and laudanum—half an ounce of the aperient to twenty or thirty drops of the opiate—and hot fomentations to the abdomen; sometimes, however, leeches are necessary; but the disease will not permit of trifling, and medical aid should always be obtained.

Colic is constipation accompanied with severe "twisting" pains in the bowels—tormina, as they are termed; these occur in paroxysms, and are much relieved by pressure. There are generally flatulence, nausea, and vomiting. When these symptoms are very intense, the disease is known as ileus, or the "iliac passion." Colic is caused by cold; undigested matter or indurated feces in the intestines; gout; rheumatism; worms; the poison of lead, &c. The object of treatment is to allay irritation and to act upon the bowels; and in simple cases these are best effected by doses of castor-oil and laudanum, as recommended in dysentery. To these, aromatics may be added, such as tinctures of ginger, cloves, peppermint, &c. In severe cases opium in large doses must be exhibited, and the patient kept under its influence until a free evacuation is obtained. Generally speaking, opium produces constipation; but in this case it relieves it by its antispasmodic action. External stimulation and fomentations must in no case be neglected, and injections of warm water are to be employed. Colic may terminate in inflammation.

In colic arising from lead poisoning (see p. 82) the occupation of the patient, the gradual development of the disease, the blue margin

of the gums, and paralysis, at once indicate the nature of the disease. The treatment consists of calomel and opium, as before recommended (p. 83), castor-oil, warm water enemata, the hot bath, and, if there is much pain in the bowels, the application of leeches to the abdomen. When a patient presents himself with what are called "dropped hands," a paralytic affection, and who is not in the habit of using paints or lead in any commercial or other occupation, our attention ought to be directed to the water he usually drinks. We often find this to be of a character which decomposes the leaden pipes in which it is conveyed, and thus to have brought about the disease in question.

Constipation.—When digestion has to a certain extent been completed in the stomach, the soft and pulpy mass which remains passes into the small intestine, becomes intimately mixed with the excretions of the liver and pancreas, and in its farther progress is exposed to the action of innumerable absorbent vessels, by which the whole of its remaining nutriment is extracted. The residual mass, composed partly of indigestible matter, such as the woody fibre of vegetable food, and partly of effete matter separated from the blood and secreted by the mucous membrane of the digestive canal, is stored up in that part of the large intestines called the colon. Here it seems to undergo still further changes, losing part of its moisture, and acquiring a more solid consistence; but the principal use of the colon seems to be to serve as a receptacle in which the fecal matter, which is constantly being formed, may accumulate and be retained until it has acquired a certain bulk, when it gives rise to peculiar sensations which indicate the necessity for its expulsion. In the large majority of instances this evacuation takes place with great regularity as to time, once in the twenty-four hours; but to this rule there are many exceptions; in some persons it may occur several times in the same period, while in others, in perfect health, the intervals may be habitually prolonged to two, three, or even more days. When, from whatever cause, the healthy interval between the evacuations become prolonged or irregular, the bowels are said to be constipated; and, if this condition be not soon relieved, various unpleasant consequences follow, and the health may be seriously impaired.

The principal symptoms of habitual constipation, in addition, of course, to the torpid state of the bowels, are a white and clammy state of the tongue, sallow or muddy complexion, a dark ring or areola, as it is termed, round the eyes, and indigestion in its various forms; the appetite is irregular and capricious, being at times ravenous, and again deficient; there is frequent sickness, and dull, heavy

pain in the forehead. The separation of effete and offensive matter from the blood being checked, the circulation is contaminated; the various organs fail to perform their functions in a healthy manner; and numerous sympathetic affections are thus engendered, which may mislead even the physician from the true source of the disease. Were this waste matter wholly retained, it would accumulate until the circulating fluid was so poisoned as to be unfit for the support of life; but this danger is, to a certain extent, averted by the vicarious performance of the neglected duty by various other organs, especially by the kidneys, the skin, and, to a certain extent, the mucous membrane of the lungs; hence we find that the urine is high coloured and loaded with a copious sediment, the skin is moist and clammy, the perspiration offensive, and the breath fetid. In neglected cases the fecal matter accumulates in the colon so as to distend it to many times its natural diameter, forming large irregular lumps, which may readily be felt projecting under the walls of the abdomen; the muscular power of the intestine so distended is impaired or lost, and the constipation is thus aggravated by the inability of the bowel to propel its contents. These large masses are farther injurious by pressing upon and interrupting the healthy performance of the functions of the surrounding viscera; obstinate vomiting, severe dyspepsia, and palpitation of the heart, are thus commonly produced, and may exist to such an extent as to deceive even the physician into the belief that they are caused by serious organic disease. Again, by pressing upon the large abdominal veins, by which the blood is returned from the lower viscera and legs, they are liable to cause hæmorrhoids, and swelling of the feet and ankles.

The treatment of habitual constipation is twofold, and consists, first, in clearing the bowels of the morbid accumulation; and, secondly, in adopting such measures as shall ensure the healthy performance of their functions, without the necessity of having recourse to medicine.

In cases, therefore, in which the constipation has been of some continuance, and the symptoms above enumerated are present, to a greater or less extent, we may begin by the administration of several doses of active purgative medicine. The selection of an appropriate purgative is a matter of some importance. By over distension, the muscular power of the bowels has been impaired, and they are no longer able to propel their contents, except under the influence of a powerful stimulus; it is, therefore, necessary to make use of some preparation which will at once remove the offending mass and restore the muscular power which has been lost. For this purpose the union

of a tonic with a purgative is especially useful. For a robust male, two ounces of infusion of senna, an equal quantity of infusion of gentian, and a drachm of compound tincture of cardamoms may be taken for a draught; and should this not be sufficient, the same quantity may be taken in two doses, at intervals of four hours, aided by an enema of two pints of warm water, in which a table-spoonful of common salt has been dissolved. When the bowels have been well cleared out, it may be necessary, for some little time, to assist their action by the daily use of some mild aperient. For this purpose, pills are, in general, to be preferred, as they are more easily taken; two scruples of extract of aloes, one drachm of myrrh, half a drachm of extract of gentian, and the same quantity of sulphate of iron, may be divided into thirty-six pills, two of which may be taken daily, immediately after dinner; or, if it be preferred, three tea-spoonfuls of the following electuary may be taken every morning; confection of senna, one ounce; sulphur, half an ounce; and syrup of tolu, sufficient to make an electuary.

It is a matter of much greater importance, however, to non-professional people, to adopt a system which shall ensure a healthy condition of the bowels without the aid of medicine. In this pill-ridden country, the use of purgative medicines is abused to an extent that is frequently productive of inflammation, ulceration, and other lesions of the mucous membrane of the bowels, which, if not fatal, are followed by permanent derangement of the health; and this, in cases where a little patience, a little attention to a few simple and natural rules, would have been sufficient to obviate all inconvenience. The healthy intervals between the evacuations vary in different individuals, and must be ascertained by each one for himself; any attempt to reduce them all to one common standard is absurd and unphilosophical, and can only be productive of evil. When the natural interval is exceeded, so long as the health does not suffer, immediate recourse should not be had to medicine; the source of the evil probably lies in some error in diet, or in some neglect of those natural laws by attention to which alone health can be preserved. It should be borne in mind that, unless there be a certain proportion of indigestible matter in the food, the bowels will cease to receive their natural stimulus, will fail to pour out their healthy secretions, and will cease to propel their too scanty contents; as is commonly the result of a diet too purely animal, the great bulk of which is digested and assimilated. Nature has created man an omnivorous animal; she has provided him with broad molar teeth to grind, and with long con-

voluted intestines to digest vegetable food; and the neglect of such a manifest hint, a too close approximation to the habits of the carnivora, will inevitably be followed by disorder of the organs thus slighted. The prejudice against the use of vegetable food, too common even among medical men, is unfounded and unreasonable; a healthy stomach will find no difficulty in disposing of a due proportion of any of the ordinary pot-herbs, if they be properly cooked; and for one which has been enfeebled by excess or injudicious management, there are various substances by which the residue of digestion may be increased, while its powers are not unduly taxed. The substitution of brown for white bread has often a most salutary effect in such cases, the bran which it contains acting as a gentle stimulus to the mucous lining of the bowels; and the same may be said of certain domestic remedies, often sneered at by those who labour under an erroneous estimation of their own superior wisdom, such as figs, stewed prunes, stewed apples, &c. &c.; these form mild and agreeable laxatives, and will seldom disagree even with the most uneasy stomach.

Another popular and potent remedy, a large tumbler of cold spring water, taken the first thing on rising in the morning, seldom fails to produce the desired effect, except in obstinate cases, and should always be tried before having recourse to the stores of the druggist, or to Dr. So-and-So's dinner pill. Regular walking exercise, within the limits of undue fatigue, is essential to the free circulation of the blood in the abdominal organs, and the healthy performance of their duties; and the same objects will be promoted by the free use of cold water externally, and the vigorous application of the horse-hair glove morning and evening, to the surface of the abdomen; and this is especially requisite in the case of those whose occupations are sedentary, or who, from whatever cause, neglect out-door exercise.

The records of medical science abound with curious cases of the extent to which constipation may exist. We are told of the feces being retained, without serious mischief, for half-a-year, two years, and seven years. Thomassini relates a case where evacuation occurred but once in twenty-two days, the periods having extended from eight, ten, and twelve days. Dr. Crampton had a patient who had had no evacuation from her bowels for eight months, and only two or three motions in the preceding year. Dr. Heberden knew a person who, all his life, had but one motion a-month. And it is no unusual occurrence to be consulted in cases where the bowels move but once

a-week. But, whatever be its duration, constipation is not only a severe physical inconvenience, but a great moral evil. It is one well worthy the attention of those whose speciality it is to "minister to the mind diseased;" and to such gentlemen I strongly recommend the subject for "psychological consideration." In the great majority of cases, a cross and ill-tempered child will be relieved by a dose of castor-oil—bad humour finding a ready vent under its persuasive powers. Nay more, I am very much inclined to think that the "family jars" which so disturb the peace of the domestic circle would be lessened, both in frequency and intensity, by the judicious administration of household medicine. Anger is a brief madness; so is jealousy. They both act with great intensity upon the secretions; and Horace was right when he said of the "green-eyed monster," that it made the liver swell with bile, and cause jaundice. The ancients, too, knew full well the importance of purgatives; and when a man committed a foolish action; was a slave to his passions; formed false ideas of things, and could not discern between virtue and vice; neglected his affairs; wasted his substance in riotous living; ran into debt,—in a word, was what in the present day is called a "fast man"—it was "Naviget Anticyram"—away with him to Anticyra! for there grew the best hellebore, which they used as a purgative to cure such disorders of the mind. Crimes I believe to be often perpetrated under the influence of constipation, which otherwise would not have been committed. Regarding suicide, a story is told of Voltaire and an Englishman. They fixed an hour to leave this world and all its woes. The time came; but meanwhile the bowels of the philosopher had operated, and his insanity, for that time at least, had passed away. My limits, however, will not permit me to enter further upon this all-important topic. I have, however, said enough to convey some useful hints for family practice.

Diarrhœa.—There is a form of diarrhœa which is common at all periods of the year, and to which every one is more or less liable. It is generally slight and of short duration, and is excited by some error either in the quantity or the quality of the food. It is especially induced by the mixture of a great variety of articles, even though the quantity may not have been excessive, or by a sudden change in the manner of living, as on first visiting a foreign country. It generally subsides spontaneously, when the source of irritation has been expelled by the natural process; but the termination may be accelerated by some mild purgative, such as a table-spoonful of castor-oil, to which six or eight drops of laudanum may be added, if there is much griping

and pain. There can be no question that the more severe form which is prevalent in autumn is, in many instances, due to the same exciting cause, and may be attributed to the free consumption of fruit and indigestible vegetables, such as cucumbers, salads, &c.; but the epidemic form which it often assumes, even among those who are guiltless of any such dietetic indiscretions, indicates that there is some farther influence, probable atmospheric, concerned in its production. The exact nature of this agent it is impossible to determine, but numerous facts have been ascertained with regard to it, which indicate the precautionary measures which should be taken to avert its attacks. Rapid alternations of temperature, exposure to cold and wet, a sudden chill when over-heated, or those causes generally, which at other seasons are liable to be followed by affections of the chest, are, in autumn, prone to exert their prejudicial effects upon the bowels. Those, also, whose vital energy has been reduced by any depressing cause, such as fatigue, insufficient food, or debauchery, are liable to be attacked; but the most fruitful source of severe bowel complaints is unquestionably to be traced to exposure to the foul effluvia from open drains, sewers, and cesspools, which, in spite of the efforts of Sanitary Commissioners, still spread pestilence through many of our towns, and which, during the hot and close weather of the autumn months, are particularly offensive and dangerous. Every effort, therefore, should be exerted to preserve the purity of the atmosphere, by having all such receptacles of filth properly covered in and thoroughly cleansed by flushes of water; all indigestible articles of food should be avoided, and care should be taken to shift the clothing immediately, if accidentally exposed to the rain. These precautions are especially necessary when the disease prevails in a severe form, or if there be any threatening of Asiatic cholera; under these circumstances a broad flannel belt should be worn over the abdomen, regular habits should be observed, and all excesses, particularly in drinking, carefully shunned. On the first symptoms of an attack, the patient should at once assume the horizontal position, retiring to bed if they be severe, or lying down upon a sofa if mild; perfect rest is of great effect in calming the irritability of the bowels. The abdomen should be fomented with water as hot as it can be borne; or a piece of flannel wrung out of hot water and sprinkled with laudanum may be firmly bound over it with a large towel. Sickness and thirst are best relieved by small pieces of ice allowed to dissolve slowly in the mouth till they can be swallowed; or by effervescing draughts in very small quantities. If there be any reason to suppose that any irritating

matter is contained in the bowels, a dose of castor-oil and laudanum may be taken; but if not, or if it have been expelled by several free motions, the following should at once be commenced:—Aromatic spirits of ammonia and tincture of catechu, of each four drachms; aromatic confection, one drachm and a half; laudanum, eighty drops; chalk mixture, seven ounces. Two table-spoonfuls may be taken by an adult every two or three hours, or after every liquid motion. It should be distinctly understood, however, that neither laudanum nor any other preparation of opium should ever be given to children except under medical supervision, as numerous fatal accidents have occurred from its imprudent administration; even in adults, its effects should be watched. The compound chalk powder will often be taken more readily by children, and may be given in doses of from five to twenty grains in any suitable vehicle. If in spite of these means the purging continues very severe and exhausting, and if medical assistance cannot be procured, an opiate enema may be administered, provided the patient be an adult. To ensure its beneficial effect, the bowels should first be washed out by an ordinary enema of warm water, and then thirty drops of laudanum in a wine-glassful of thin starch are to be injected, and retained as long as possible; this plan should only be resorted to in urgent cases. It is only in protracted attacks, where the patient's strength is much reduced, that he will be disposed to take nourishment. During the first burst of the complaint, the less that is taken the better; subsequently, small quantities of boiled rice, or sago, or arrow-root, with the addition, if necessary, of a little port-wine, may be given from time to time. The return to the usual diet should be made slowly and cautiously, great care being taken to avoid overloading the stomach; and if much weakness and loss of appetite should remain, half a wine-glassful of infusion of cusparia, made by macerating five drachms of bark in a pint of boiling water, and straining, may be taken three times a-day; ten or fifteen drops of dilute sulphuric acid may be added to each dose with advantage, in some cases.

Worms.—Both man and animals—vertebrate and invertebrate—are infested with parasites. The human being boasts of twelve; the ox has eleven; the sheep, the horse, the hog, and the fox have nine; the hare has eight; birds in general have seven; the salmon has eight, and the perch seven. Almost every organ of the body, also, seems to be distinguished by its proper inhabitants; and how they got there is still a matter of wonder to the unlearned, and of doubt even to the physician. Many hypotheses have been proposed to

account for their presence. Leuwenhoek, Linnæus, and others, assert that they are received into the body with the aliment, in the form of eggs deposited by animals whose natural abode is without the body; others—as Pallas, Brera, and Rhind—that they also arise from eggs, but that these eggs are those of the worms which inhabit other bodies; Valisnieri and others that they are born with the being they inhabit; Heller and others, that they have existed from the beginning of time. None of these hypotheses are tenable; but the subject is more curious than practical, and must not further detain us. Three very distinct species of worms are found in the intestines of man; and, strange to say, each holds its own station, and rarely intrudes upon the domain of its neighbour. I will briefly describe them:—1. The round-worm, *Ascaris lumbricoides*, is about the size and shape of the common earth-worm, although a totally distinct species. Its abode is generally in the small intestines, from which, however, it sometimes wanders into the stomach, and even into the mouth and nostrils, or it often makes its way into the bowels and the large intestines. It is not unfrequently solitary, but sometimes exists in great numbers; thus two hundred have been expelled from one patient in the course of a week. 2. The thread-worm, *Ascaris vermicularis*, is the smallest of the family—three to five lines in length; and very like a small piece of white thread. It generally inhabits the lower bowels, giving rise to great irritation and itching. There is another species of Ascarides; but it is sufficient, for present purposes, to consider the two as one. 3. The tape-worm, *Tænia*, varies in length; it is generally found from five to ten feet long, but is recorded as having reached sixty and even one hundred feet. It is flat, about five lines broad, and divided into segments. They are more common in some countries than in others, and a broader variety is said to be peculiar to the inhabitants of Switzerland, Poland, and Russia. As regards the general symptoms which indicate the presence of worms, there is generally uneasiness in the bowels, not amounting to pain, but still annoying and indescribable. The nose itches; the bowels are disordered; the appetite is capricious; the belly more or less hard and swollen; the breath offensive; the temper fretful and irritable; and sleep disturbed. In children, fits, and St. Vitus' dance, *Chorea*, and even insanity have been ascribed to worms. Cough, palpitation, general œdema, or swelling produced by the accumulation of fluid under the skin, and emaciation, are frequent results of their baneful presence; and yet, because persons in apparent health are sometimes affected with worms, it has been boldly asserted, not only that they are harmless, but that they perform the

office of scavengers, and clear off the noxious matters contained in the bowels! I will not argue the point; suffice it to say, that where they have indicated their presence by the disordered health of the individual, their expulsion has always been attended with the happiest results; and that he is a wise man, who, having discovered that they prey upon him, gives them notice to quit without the slightest delay. And how is that to be effected? The means that have been proposed for the expulsion of worms—vermifuges, as they are termed—are almost as numerous as those for the cure of cholera. They are, however, of two kinds: those which act as purgatives, by increasing the action of the bowels, and thus favouring expulsion; and those which either poison the animals at once, or wound them till they die, or prove so disagreeable to them that they leave the bowels. Among the former, those most to be depended upon are calomel and scammony, gamboge and castor-oil, in doses according to the age of the patient; but it is a bad plan to vex the bowels by active purgation until anthelmintic medicines have been tried. Among the latter there are the pink-root, the male fern, the bark of the pomegranate, walnut rind, salt, camphor, bitters, copaiva balsam, wormseed, tansy, rue, wormwood, garlic, assafetida, and many others. Some of the volatile oils also are efficacious, as those of turpentine and chenopodium. Cowhage acts mechanically, by wounding the worms with its sharp bristles; while the powder of tin or zinc bruises or scratches them by its angular particles. The fixed oils are supposed also to act as anthelmintics, by covering the surface of the worm, and closing its respiratory pores against the entrance of air. But the most effectual remedy is the kousso, the flowers of Rosaceous tree not long since imported into this country. Armed with a decoction of this drug, I have most successfully waged wars of extermination against round-worms, tape-worms, and thread-worms—all have perished under its influence, and been ignominiously expelled from their habitation. The best mode of administering it is to infuse half an ounce in a pint of hot water, boiling it down to about two-thirds. The patient must fast for twelve hours before taking it; that is to say, he must go to bed supperless, and early in the morning take his dose in three portions, and at intervals of half an hour. Two hours after the last dose he is to take a table-spoonful of castor-oil. The remedy had better be repeated in the course of a few days. When thread-worms infest the rectum, an injection of the infusion of kousso will generally remove them. Turpentine also, in the same form, is often successful; but I think the kousso should always be first

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ance in the process of digestion has been confirmed by an ingenious, though cruel, experiment. The bile-duct has been divided in various animals, and, by fixing it in the wound of the abdomen, made to discharge its contents externally. The animals thus treated, after recovering from the immediate effects of the operation, consume even more than their usual amount of food, but it does not seem to have any nourishing effect; they become thin and weak, lose their appetite, and die generally in a few months. If, however, they be permitted to lick the orifice from which the bile flows, so as to receive it into their stomachs, digestion does not seem to be impaired, and they remain fat and healthy.

Attached to the liver is the gall-bladder, where the bile is stored up, until it is required for the purposes of digestion; this appendix is rendered necessary by the fact that the secretion is going on constantly, while in man, and many other animals, especially the carnivora, the food is taken at considerable intervals. In some herbivorous animals, in which digestion is going on almost continually, the gall-bladder is absent.

From this brief sketch of the physiology of the liver, it must be evident that any derangement of its functions, any suppression or imperfect performance of its important secretion, must be attended with injurious consequences, not only to the digestive and assimilative processes, but, through the contamination of the circulation, to the system at large. We find, therefore, that those suffering from functional disease of this organ, complain of dyspepsia in its various forms; they are much troubled with flatulence, and a dull, aching pain in the right side, coming on about an hour after meals, is a common symptom. The tongue is broad, clammy, and white, except towards its root, where it is often of a yellowish colour, more or less marked in different individuals; there is a bitter taste in the mouth, especially on awaking in the morning; and during digestion there are frequent eructations of an intensely bitter fluid into the back of the throat, or even into the mouth. When these symptoms are present, we will find further evidence of biliary derangement in the state of the bowels, which are generally obstinately constipated, the natural muscular action by which their contents are propelled being no longer excited by the healthy secretion, the absence of which is still more clearly indicated by the pale and unnatural appearance of the evacuations. This condition occasionally alternates with diarrhœa, caused, apparently, by a sudden pouring out of accumulated and unhealthy bile, which tinges the evacuations of a dark, pitchy, or

greenish colour, and gives a temporary relief to the general symptoms.

Detained in the blood, the purely excrementitious constituents of the secretion manifest their presence by the sallow and dingy hue which the complexion assumes, and still more clearly in the yellowish tinge of the "white of the eye." Were there no other outlet for the poisonous ingredient, jaundice would ensue; and if it were completely suppressed, the result would be fatal; but, fortunately, in the great majority of instances, the kidney undertakes a part of the neglected duty. The urine is turbid, high-coloured, deposits a copious sediment, and, in severe cases, will even tinge the linen of a yellow colour, from the abundance of the bile which it contains. In short, every function of the body participates in the general disorder; the eyes are dazzled by innumerable spots and films floating before them; the ears are confused by the ringing of bells or the sounding of railway whistles; the sense of smell is blunted, sometimes perverted in the most singular manner. The brain itself does not escape; on the contrary, it is generally the first to suffer. There is dull frontal headache; an inability for any mental exertion; the temper becomes peevish, irritable, and capricious; and the whole man is so altered as scarcely to be recognisable by his friends. There can be no question that to the gloomy influence of hypochondria are to be attributed some of the most remarkable errors of celebrated men, some of the most lamentable excesses of noted criminals that are recorded in history; the hero has shrunk into the poltroon, the philanthropist into the savage, the philosopher into the fool. Strange that "battle, murder, and sudden death," might frequently be averted by the timely administration of a blue pill and a black draught; that to the derangement of Imperial viscera may be due the calamities which now overwhelm the East, and which threaten to involve the whole of Europe in war.

An acquaintance with the exciting causes of the functional diseases of the liver, at once suggests the appropriate means for preventing their occurrence. Whatever impairs the quality, or interferes with the free circulation of the large quantity of blood which is subjected to its influence, must necessarily have an injurious effect upon its secretion; the quality of the blood is most frequently impaired by luxurious living—the freedom of its circulation by indolence and sedentary habits. There are few who can afford it who do not habitually consume more food than is required to supply the wear and tear of the system; and as this excess of supply over the demand must to a certain extent be discharged from the body, the various excreting

organs are taxed with more than their natural duty, and none more so than the liver, through which the blood, loaded with the imperfectly digested food, is immediately passed. Temperance, then, in food as well as in drink, is evidently essential to those who have any respect for their internal economy; animal food should be taken much more sparingly than is common among the middle and upper classes of this country; and the good old rule, to rise from table with an appetite, should be rigidly observed. At the same time, the free current of the blood should be promoted by active exercise, which, by calling the muscles of the abdomen into play, produces a regular pressure, or rather a series of concussions upon its contents, which is eminently useful in exciting and regulating the circulation. The ill effects of want of exercise are strikingly seen in the sallow complexions and disordered digestions of those who are employed in sedentary trades, and in none more than in shoemakers, whose abdominal circulation is farther obstructed by the bent position in which they work, and by the pressure of the last.

When these precautions have been neglected, and the symptoms above described indicate that the function of the liver is disordered, it will probably be necessary to have recourse to medicine. It has been too much the fashion to resort immediately to large doses of mercurial medicines, which, though they afford present relief, are, when imprudently or too frequently employed, liable to produce injurious and irritating effects upon the liver. It is a safer plan to begin by clearing out the bowels freely by some purgative, such as Epsom or Glauber salts, infusion of senna or jalap, which will produce copious watery evacuations, and aid in relieving the abdominal congestion by draining off part of the superabundant fluid. This will frequently, in slight cases, be sufficient; but if the symptoms still linger, mercury in small quantities may then be usefully employed. One grain of blue pill, combined with two of compound colocynth, and half a grain of powder of ipecacuan, may be taken on three successive nights and mornings; and if at the same time the bowels be kept regular and the diet moderate, and if the liver be not stimulated by wine, spirits, or fermented liquors, it is probable that effectual relief will be obtained. In chronic or obstinate cases, it is better, if possible, to take a course of some mineral water, such as that of Cheltenham, than to persevere in using the more concentrated and irritating drugs of the chemist; while in this, as in many other complaints, the relaxation and amusements of a watering-place produce a beneficial change, which medicine alone fails to effect.

Biliousness is the most mysterious of "all the ills that flesh is heir to;" thousands declare themselves its victims, yet scarcely two attach precisely the same meaning to the term; fortunate sceptics doubt its existence, and grave physicians dispute its pathology. Though not disposed to be oracular upon such a recondite subject, we may endeavour to give it a "local habitation and a name," and to indicate its treatment, curative and preventive. The bile is poured into the small intestine at a short distance from the outlet of the stomach, and becomes intimately mixed with the partially digested food, aiding in the completion of the process, and acting, besides, as the natural stimulus to the healthy action of the bowels. When redundant in quantity, or vitiated in quality, it is apt to excite diarrhœa; when deficient, digestion is imperfectly performed, and the bowels are torpid and irregular. When not duly eliminated from the blood, the effects vary according to the extent of the suppression; when this is complete, jaundice is the result, which if not relieved, terminates in death, from the poisoning of the whole system by the retained secretion; when the secretion is imperfectly performed, rather than suppressed, a very small quantity merely being retained in the blood, the train of symptoms which follows may, properly speaking, be termed bilious. These symptoms are, languor; dullness; loss of appetite; nausea; a feeling of general indisposition; drowsiness; headache; giddiness, which sometimes comes on suddenly so as to oblige the patient to grasp at the nearest object for support; sudden and transitory dimness of vision; the appearance of "blacks" floating before the eyes, technically called "muscæ volitantes;" itching of the skin; dull and muddy complexion, and yellow discoloration of the white of the eye. Such are the most ordinary symptoms of "bile," though they may not all be accumulated upon the same hapless individual at one time. If neglected, or sometimes without any premonitory indications, an acute attack comes on; this is characterized by very obstinate sickness and vomiting; dull, but very distressing headache; thirst; parched and dry mouth; furred tongue and hot skin; which feverish symptoms are sometimes ushered in by a fit of shivering. The vomited matter is intensely bitter, and after a short time consists almost entirely of bile; this circumstance has given rise to the erroneous opinion that the attack is due to what is termed an "overflow of bile;" the true explanation is simple. The action of the duodenum, the part into which the secretion is poured, is inverted, and its contents regurgitate into the stomach, and the same thing may be observed in obstinate vomiting from whatever cause; as, for instance, in sea-

sickness. The attack is seldom relieved until the bowels have been freely opened, though it sometimes subsides suddenly before this has occurred; but the treatment will be sufficiently evident from the general remarks I have made upon liver complaints.

JAUNDICE.—From the preceding observations, nothing remains to be said upon jaundice. Its causes and symptoms must now be fully understood, while the treatment is obvious, and requires no further comment.

THE GALL-BLADDER is sometimes the seat of inflammation; but the affection, which is generally complicated with inflammation of the liver, with which organ the gall-bladder is in immediate contact, is very obscure and the diagnosis difficult. It is also liable to distention, as resulting from its contents being unable to flow into the intestines in consequence of the presence of

GALL-STONES, of which I am now to speak. These concretions are also called biliary calculi, from being deposited from the bile, as urinary calculi, or stones in the bladder, are deposited from the urine. Gall-stones vary considerably in number, in size, and in shape. They may be so small as to occasion no inconvenience; so large as to cause excruciating torture in their passage through the duct into the bowels; or so enormous as almost, if not entirely, to fill the bladder itself. They are sometimes round, sometimes angular with many irregular faces, and this particularly when numerous; since, being soft, they are pressed against each other and thus moulded into form. In colour, they are of a brownish yellow. The bile, secreted by the liver and stored up in the gall-bladder, is conveyed from that organ into the intestines for admixture with the food for the purposes of assimilation, by a short tube or duct of about the calibre of a goose-quill. In the passage of gall-stones through this duct, which is often smaller than the concretion, great suffering is induced. The paroxysms are very severe, the pain extending down the back and side. There is often an intermission of pain; and its entire cessation indicates that the offending body has passed through its narrow channel and made its way into the capacious intestines. By adding water to the evacuations, gall-stones may be detected floating upon the surface. If they are round, it is pretty certain that there are no more; but when angular, for the reasons I have stated, others probably exist. We must endeavour to allay the pain and relax the gall-duct. Opium may be given in grain doses every hour, or twenty drops of laudanum. A hot bath—not a warm bath, but one at 110°—should be continued until faintness comes on, and small nauseating doses of tartrate of

antimony—two grains dissolved in a pint of water, and a table-spoonful taken every half-hour, will be useful. The orthodox after-treatment, which is entirely empirical, consists of a course of alkaline medicines, which are supposed, though with little truth, to be solvents of the bile. Turpentine, too, has been greatly lauded; nitric acid and taraxacum have had their advocates; but I believe nothing is better than regular exercise and a careful diet, avoiding fat meats and an excess of animal food. A course of Cheltenham waters is often of great service.

THE PANCREAS, or SWEETBREAD, has already been spoken of (page 19) as concerned in the process of digestion, during which period it pours out a secretion, called the pancreatic juice, in considerable quantities. The exclusive function of the pancreas seems to be, from the experiments of M. Bernard, to act upon fatty matters, and to bring them into a state suitable for absorption by the lacteals. Hence we may infer that in diseases of this organ the oleaginous substances used as food are not properly assimilated; and it is asserted that where undigested fat has been evacuated, examination after death has proved the existence of pancreatic disorder. I must here, however, state that the pancreas has been removed in dogs without inconvenience; that men may live for years with degeneration of this organ; and yet, according to Frierchs and Lentz, even under these circumstances fatty substances have been found digested and absorbed. In fact, we know little about the matter; and, from the deep-seated position of the organ, its intimate connection with other parts which always suffer with it, and the difficulty of diagnosis, almost as little is known about its diseases. Indeed, disorganization of the pancreas is more frequently detected after death than during life; for the deep-seated pain which accompanies it may be readily attributed to affections of other organs, as also may nausea, emaciation, jaundice, and colourless stools. The causes, too, of disease of the pancreas are fully as obscure. They have been attributed to the use of mercury; the abuse of tobacco; mumps, and the translation of affections of other glands, as well as of the parotid; hydrophobia; and fever. As regards treatment, if the affection be detected, we must depend upon iodine or bromine; if undetected, the case must be treated empirically, and symptoms relieved as they arise.

THE SPLEEN has highly important functions to perform. These, however, are not perfectly understood, further than the organ plays a great part in determining the composition of the blood, and perhaps in assisting in the functions of the liver. During digestion the

spleen, like the liver and pancreas, is active; its vessels are full of blood; its size, therefore, is greater, and its peculiar structure more prominent. The blood passing out of it by the splenic vein is different in chemical and microscopical characters from the blood going into it by the splenic artery. This shows the great effect produced on the blood as it circulates through the spleen; but these changes are too recondite for popular discussion, and are in fact not yet fully understood. Although they are doubtless very important, nevertheless the spleen has been, like the pancreas, extirpated in dogs without much injury; and, like it also, its diseases are obscure and little known. Whatever retards the circulation of the blood, either in the heart or portal vein, as insufficiency of the forces which propel it, the cold stage of fever, asphyxia, and diseases of feeble action, may cause congestion and enlargement of the spleen; and it is very difficult to decide whether the disease be simple congestion, inflammation, or specific organic disease. We know the spleen is often enlarged after ague, and we also know it is sometimes enlarged idiopathically, that is, without any apparent cause; and further, that its capsule or covering is liable to inflammation. And so little further do we know, that even after death it is sometimes impossible to determine the exact nature of the lesion we discover. It is an interesting fact, however, that in many cases of sudden death the spleen has been found enlarged and softened. The spleen lies deeply in the left hypochondrium, that is, in the left and upper portion of the abdomen, immediately under the false ribs. When diseased there is pain in this situation, particularly on pressure, and a movable tumour can generally be felt, of an oblong shape; there are symptoms of dyspepsia, depression of spirits, "a fit of spleen," sometimes cough, inability to lie upon the right side, and dropsical effusions. If the attack is acute, it must be treated upon general principles—general and local bleeding, purgation, warm fomentations, blisters, &c. When chronic, tonics combined with aperients seem most useful. If after ague, quinine is highly beneficial, and often effects a cure. Iodine has been strongly recommended, the iodide of iron is perhaps the most preferable form. Nitric and nitro-muriatic acids have been prescribed with good effect; and local means, as setons, blisters, &c., must not be neglected. But the disease is one entirely for the treatment of the physician, and I need not further dwell upon it.

Mesenteric Disease.—The organs which are the seat of this affection are those through which the chyle passes in its passage from the bowels to the thoracic duct; and thence, as the results of affections of

these organs we have a mal-assimilation of food and a consequent wasting of the body. The mesenteric glands are not unfrequently the seat of inflammation; but the affection, owing to the depth of the parts involved, is rarely detected, especially in its early stages. Scrofula, of which I am hereafter to speak, is a common disease of these glands, and the result either of an hereditary taint or of bad food, insufficient clothing, defective ventilation, and disobedience to those general laws which Nature has declared shall not be offended against without the offence bringing with it its own punishment. *Tabes mesenterica*, as this complaint is sometimes termed, is generally associated with other affections, such as consumption, spine disease, water on the brain, rickets, &c., &c. The disease is most frequent in children, and its most marked symptoms are prominent and hardened belly, and general emaciation. The child's face is shrunken. It looks aged; is dull, and indisposed to exertion. The secretions are deranged; the stools generally of a clayey or chalky appearance; the breath is offensive; the perspiration sour; the urine milky; cough is frequent; weakness increases; dropsical symptoms occur; and the patient dies exhausted. But these symptoms may extend over a course of years; and death is often due less to the disease itself than to the complications to which I have alluded. The treatment will be laid down with that of scrofula; but it is only in the early stage that treatment is of much avail. Then there is much hope, especially if the means exist for enforcing fresh air and exercise, with nutritious food and warm clothing. When emaciation is great, and night-sweats and diarrhœa set in, little can be done but smooth the passage to the grave.

I cannot leave this section of my subject without alluding to

Flatulence, and that although it be more symptomatic of disease than disease itself. To contain a certain amount of gas is natural to the stomach and bowels; when this is in excess, then only does it become inconvenient. And really the internal commotions and noises—aptly to be compared to the thunder that precedes the storm, and the convulsive movements that usher in the earthquake—with which some persons are afflicted, are most distressing, often rendering the unhappy sufferer an object of dislike, if not of disgust. The rumbling or gurgling sound in the bowels with which some persons are annoyed—*borborygmus*—is produced by gas passing from one part of the intestines to another, and mixing with the contained fluids. This at all times produces an annoying feeling of distention, and sometimes pain, amounting to that of colic. Another form of flatulence, differing,

however, in degree not in kind, is what is popularly termed Drumbelly—scientifically, Meteorism or Tympanites. Here the quantity of gas may be very great, visibly distending the bowels; and when confined to a certain portion of the intestines, even giving rise to the suspicion of solid tumours or pregnancy. Cases are related in which the distention was so great that neighbouring parts were pressed upon, respiration interfered with, and death ensued; the intestines also have been ruptured by expansion of the confined air. Flatulence, whatever may be its extent, is generally caused by dyspepsia, or torpid bowels, or by spasmodic or permanent striotures of the intestines; it is also a usual attendant upon fevers, colic, constipation, and hysteria. When slight it may be removed by carminative medicines. Gregory's mixture of rhubarb, magnesia, and ginger, a tea-spoonful for a dose in a wine-glass of peppermint-water, is very useful. Ginger-tea also is beneficial. Stimulants also may be had recourse to, such as turpentine in half-ounce doses; sal-volatile and Hoffmann's anodyne; a mixture of assafœtida and sulphuric ether, particularly in hysterical females. Mild cathartics must be administered, and exercise insisted upon. Great care must be bestowed upon the diet, and all indigestible food avoided. Salads, cabbage, cucumbers, and unripe fruits are peculiarly apt to evolve gases even in a healthy stomach; and these, therefore, and also fermented liquors, should not be taken. Plain food, with a little brandy-and-water, regular exercise, and the avoidance of luxurious habits, will generally correct the tendency to flatulence.

In infants and young children flatulence is very common; but it is generally removed by a little magnesia with any aromatic water, as cinnamon, peppermint, or camphor.

CHAPTER XIII.

DISEASES OF THE ORGANS OF CIRCULATION.

Having spoken in a previous chapter of the diseases of the blood itself, it is now necessary to enter upon those of the apparatus by which it is conveyed. Interfering as they do with the proper distribution of a fluid essential to every function of life, these diseases constitute a most important class. The reader must bear in mind

that while in the body the blood is always contained in vessels going from or returning to the central organ, the heart. From the former pass large trunks, the *arteries*, which ramify into all parts of the body, and subdivide in the smallest twigs, which, from their hair-like minuteness, are called *capillaries*. These, again, having supplied freely the parts to which they are sent, re-unite into common trunks, which increase in size by receiving others as they approach the heart, and are called *veins*. So perfect is the distribution of the capillaries to every part of the body, that it would be impossible to thrust a needle into any portion of the skin without wounding numbers of them, as is proved by the escape of blood. The heart is supplied with a complex apparatus of valves, which prevent the blood from flowing backwards, and oblige it to pass forward in the proper direction.

The subject thus, then, divides itself naturally into diseases of the heart itself and its valves, and the vessels which convey the blood.

Diseases of the Heart are organic or functional. With the former class domestic medicine has little or nothing to do. They can be detected only by medical men well educated in the use of the stethoscope. Their treatment, too, must never be meddled with by the unskilled; but the patient should adhere in all respects most strictly to the directions of his professional adviser. It may be stated, however, for his comfort, that the liability to sudden death in such affections is far less than is popularly supposed. Those who suffer from them often live to considerable age, and are able, with care, to enjoy life. The organic diseases of the heart begin generally in thickening of its valves, by which the latter are rendered incompetent to their office, and the blood is allowed to flow backwards. Enlargement of the heart in consequence of its increased work mostly follows, the veins are choked with blood, and after a time distress of breathing and dropsical affections occur. In a vast majority of instances the thickening of the valves, upon which depends a train of evils, is itself caused by rheumatic inflammation. A great means, therefore, of obviating the miseries attendant on heart disease is to be careful in the treatment and prevention of rheumatism.

Functional Diseases of the Heart, as indicated by palpitation, liability to faintings, attacks of pain, and distressing sensations referred to the chest, are very common. They usually occasion much anxiety and alarm, and are constantly mistaken for more serious maladies. Physicians of note have frequently remarked that those who complain most, and are most fearful that they have got "disease of the heart," almost always prove to be affected only with functional

derangement. The causes of these maladies are for the most part easily detectible, and, if the patient be willing, easily removable. "Fast" people, addicted to late hours, excessive indulgence of the animal passions, abuse of stimulants, &c., get palpitation of the heart. Let them go slowly and they will lose it. Tobacco smokers often induce extreme irritability of the heart, marked by great depression of spirits, nervousness, and apprehension of impending calamity, and not unfrequently attended by irregularity of the pulse. Let them abjure the weed and they will get well. Tobacco is an active poison, and given in full doses is felt especially by the circulatory system, and to a person unaccustomed to its use it may very quickly kill; so also long-continued small quantities undermine the health. Dyspepsia is a very frequent cause of derangement of the heart's action and troublesome palpitation. To use plain food, eat slowly, and take plenty of exercise are the dictates of common-sense. Excess in the use of either tea or coffee is a fruitful cause of these affections. The well-known power possessed by tea of driving away drowsiness is in virtue of its influence upon the heart. Sleep is caused by determination of blood to the head; and tea, by much diminishing the propelling force of the heart, decreases this determination, and induces wakefulness. If the effect be carried too far, distressing restlessness, proneness to faint, &c., may be caused. Dr. Percival relates the case of a young gentleman, who when out on a pedestrian tour drank during a day of extra exertion repeated draughts of strong green tea at all his meals. He went to bed early, feeling well, and resolved to pursue the same diet on the following day. In the night he was attacked by most distressing palpitation, the respiration became irregular and oppressed, and several times the heart's action appeared to cease. These symptoms continued throughout the night, and he was only saved, from what appeared to be impending death, by the free administration of brandy. Many similar instances have been recorded. The influence of coffee on the heart is nearly the same in kind, though less severe in degree than that of tea. The abuse of either is very much to be deprecated. Those who may have induced functional disease of the heart by overwork, too great abstemiousness, or indulgence in enervating habits, will derive much benefit from the use of steel, and a nutritious plain diet, with small quantities of bitter beer.

Congestion of the heart is a frequent source of palpitation; and mental emotion, suppressed evacuations, and violent exercise may give rise to it. Joy and anger, surprise and dismay, are followed by increased action of the heart, and may occasion congestion by causing

the blood to accumulate in the right auricle. A sudden plunge into cold water has the same effect; so has violent exercise, such as rowing, running, cricket, and other out-door sports; indeed all long-sustained muscular efforts, without previous training, occasion severe paroxysms of palpitation, and sudden death may arise from all these causes.

As regards the general treatment of palpitation, we must endeavour to remove the cause, and to shorten the paroxysms by the use of antispasmodics, such as a tea-spoonful of sal-volatile or ether in a wine-glass of water, or a cup of strong coffee. Persons subject to palpitation must avoid all circumstances liable to excite it—stimulants, either mental and intellectual or otherwise, over exercise, and over sleep. Slight opiates are useful, and so is a belladonna plaster applied over the heart. The use of the shower-bath is recommended by Dr. Walshe; and, generally speaking, attention to diet, regularity of bowels, cheerful occupation, and change of air will, when a tendency to palpitation exists, either remove it or greatly mitigate its severity.

Feeble Circulation.—This defect may be conveniently treated of here, although it concerns not only the heart but also the arteries and capillaries, more especially the latter. It is very frequently hereditary in its origin, but is also often aggravated, or may even be induced, by injudicious management during childhood. Its symptoms are a large, slow, and very soft pulse, liability to headache, and to cold feet and hands, inability for great or continued exertion, and a general torpor of both mental and bodily functions. A man's energy depends mainly on the vigour and integrity of his circulatory system. If the blood be well supplied to all parts of his body his various organs will perform their duties well. The brain will think easily and without distress; the muscles will be competent to great exertions; and the various noxious influences from without, as cold, damp, &c., will be endured with comparative impunity. All this is reversed if the heart and arteries are below par in vigour. The blood is not easily propelled to distant parts, and is liable to stagnate. Hard reading or continued thought produces headache and is endured with difficulty. The hands and feet are often very cold, and in winter are affected with chilblains. In extreme examples the hands are thick, and when warm very red, and when cold of a blue or purple tinge; the pressure of a finger leaves a pale impression, to which colour is restored only after the lapse of a few seconds. Exposure on a clear frosty day at once marks out those who suffer from feeble circulation. While others are only exhilarated, they are starved and depressed, have blue noses, pale cheeks, and dusky markings beneath the eyes. Credit is often given to men for

intellectual activity in whom the sole difference from those around them is, that the heart is more vigorous and the brain better supplied with blood. Persons are often accused of want of mental energy, infirmity of purpose, or cowardice, who are simply incapacitated by a feeble circulation for the performance of the duties expected of them. Such being its penalties, the remedies for this condition become of the very first importance, and I will first note what may be done in the way of prevention. Those expecting to become parents should endeavour by all possible means to keep themselves in good physical health, in order that their offspring may come into the world well endowed with vital power. Infants should always, if possible, be suckled either by the mother or by a wet nurse; if not practicable, asses' milk is the best substitute, and next to it cow's milk a little diluted. For the first six or nine months a liberal supply of this—nature's diet—should be furnished, but on no account any other article. During childhood, good plain cooked meat should be given once or twice every day; eggs, milk, and even perhaps small quantities of wine or beer may be also used with advantage. If the symptoms of the defective power of the circulation, as chilblains, great liability to suffer from cold feet, &c., show themselves, a medical man should be consulted, and a long course of steel, with perhaps the cod-liver oil, may be administered with the best effects—remedies which, to have any influence in renovating the constitutional power, should be given not for a few weeks, but in small doses over periods of many months; they should be made, in fact, articles of diet. Great care should be exercised in protecting the feet, and indeed the surface of the body generally, from the influence of cold. As much out-door exercise as can be endured without fatigue should be taken, but severe exertion should never be permitted before breakfast or after a long fast. Cold bathing or sponging should be adopted only when the child shows ability to rally thoroughly, and becomes warm afterwards; and then never for more than the shortest period at a time. By attention to such rules as these many a child might acquire a degree of vigour who would otherwise be doomed to suffer through life the troubles attendant upon a feeble circulation.

I must say a few words, however, for the benefit of those who have passed the period of life in which it is possible to ward off these varied evils, and are already feeling their effects. The same generous habits of diet and regimen which I have indicated as preventative will also serve to some extent as curative means. As much meat should be taken as the stomach, assisted by walking exercise, can be induced to digest; and beer and wine in moderate quantities should be allowed.

The patient must, as he values his life, on no account adopt abstemious notions, or become a disciple of Vegetarianism or Hydropathy; and when in the house, as often as convenient he will do well to pursue, in the recumbent posture, all occupations requiring mental effort. In that position the blood flows freely to the brain, and thought is conducted with comparative ease. Most who are observant of themselves must have noticed how often their most brilliant hours, as to intellectual work, are those spent in a wakeful state in bed. Smoking, and tobacco in every form, should be abjured, since they tend still further to depress the vigour of the heart's action. The use of coffee and tea should be restricted within narrow limits. Cocoa is a much better beverage. But in all affections of the heart, whether real or imaginary, the physician must be consulted, and until he has distinctly stated the nature of the complaint, and laid down the method of treatment, it is well to do nothing further than keep the patient quiet and undisturbed both in mind and body.

Diseases of Blood Vessels, which properly belong to the domains of the surgeon, will be mentioned in another part of this work; but there are two affections of this class, which, belonging especially to the physician, I may here allude to. The first is

Rupture of Blood-vessels, which sometimes occurs in the stomach, when the affection is called Hæmatemesis, or vomiting of blood. Although hæmatemesis produces great debility, it seldom proves fatal, and rest, cold fluids, or ice, both taken internally and applied in bladders over the region of the stomach, generally suffice to arrest the hæmorrhage; at any rate these means are all that are to be adopted until the doctor arrives and takes the charge of the patient. Vomiting of blood is sometimes symptomatic of other diseases, when it is to be treated accordingly. When it appears in very weak and debilitated habits tonics and mineral acids may be employed. It not unfrequently follows the suppression of any habitual discharge, as that of piles, &c.

It is very necessary to distinguish *vomiting* of blood from

Spitting of Blood, or what in scientific nomenclature is known as Hæmoptysis, or bleeding from the lungs. In bleeding from the stomach the blood is thrown up in greater quantities, and is very dark and grumous, that is, clotted. It is also generally mixed with other contents of the stomach, and is unattended with cough. In hæmoptysis, on the contrary, the blood is brought up by coughing, and generally in mouthfuls at a time; it is of a red florid colour, and mixed merely with a little frothy mucus. Dr. Walshe, one of the latest and best

authorities (*Diseases of the Lungs*, p. 351), very accurately distinguishes the two affections. He says:—"Hæmoptysis is preceded by slight dyspnœa, or shortness of breath, anomalous sensations about the chest, tightness, weight behind the sternum, or at some other spot, to which the patient will sometimes confidently point as the seat of mischief; hæmatemesis, by weight and uneasiness at the epigastrium, or region of the stomach, sometimes by nausea. When the lung supplies the blood the pulse is oftener excited, full, bounding, sometimes *bisferiens* (rebounding and conveying the sensation of a double sensation), than when the stomach is its source. A salt taste in the mouth, with tickling and gurgling sensations in the throat, often precedes actual hæmoptysis; whereas I certainly have never known this complained of in hæmatemesis. Blood is ejected in severe hæmoptysis with efforts indistinguishable by patients from those of true vomiting; but previously to such 'vomiting of blood,' mouthfuls have generally been coughed up. Hæmatemesis is attended and followed by tenderness at the epigastrium; hæmoptysis by none of this. No matter what quantity of blood be brought up from the lungs at once, small quantities continue to be expectorated for a time. When the stomach is at fault, on the contrary, full discharge occurs suddenly, and there is, generally speaking, an end of the matter; certainly no bloody or stained spots follow. In hæmoptysis the blood is florid and frothy; in hæmatemesis dark and non-aërated; at least this is the common case. But when large masses of blood are discharged from the lungs they may be totally frothless; and when hæmorrhage occurs rapidly from an artery into the stomach, the blood is vomited at once, and of perfectly arterial hue; no time is allowed for discoloration by the gastric fluids. Discharge of blood by stool is the rule in hæmatemesis; the exception in hæmoptysis. In the latter case, it comes of blood accidentally swallowed, and is never, as far as I have known, abundant." I have been thus particular in insisting upon the diagnosis between vomiting blood from the stomach—hæmatemesis—and spitting blood from the lungs—hæmoptysis—because it is a point of great practical importance to ascertain the source of the hæmorrhage. If it be from the lungs and constitutional, it is indicative of serious disease, and always indicates the presence of consumption. But it may not be constitutional; for sometimes it is accidental, and the result of loud speaking, playing on wind instruments, breathing acrid vapours, or violence. In the great majority of cases hæmoptysis is unattended with immediate danger; nevertheless measures should at once be adopted to check it. The medical attendant must be sum-

moned, and meanwhile the patient, if in bed, should be removed to a chair and made to sit up. The chest should be bathed with vinegar and very cold water, iced water, acidulated with sulphuric acid, drank, the windows of the room thrown open, and speaking or any other exertion, however slight, entirely prohibited. Ice is to be allowed to dissolve in the mouth, and it also may be applied with great advantage in a closed bladder to the spine. Ligatures, such as garters, tied tightly round the limbs, so as to arrest the current of blood in the veins, is a popular and appropriate remedy; and warmth may at the same time be applied to the feet. Medicines, such as digitalis, which lessen the action of the heart, are to be given *under medical superintendence*. Astringents, too, such as the acetate of lead, in two grain doses with vinegar and water, may be taken every half-hour, hour, or two hours, according to the urgency of the case. In the absence of these remedies, or of the medical man, common salt in iced or very cold water, a drachm every half-hour, is highly lauded—Dr. Walshe stating that in three cases he has seen it rapidly arrest the hæmorrhage. If the lung be congested, constituting what is called pulmonary apoplexy, which none but the accomplished physician can determine, small bleedings, either by leeches or from the arm, may be necessary.

Another affection of blood-vessels, which falls under the care of the physician, is the

WHITE, or MILK-LEG, the phlegmasia dolens, or phlebitis, of systematic writers. It is inflammation of a large vein of the leg, and attacks, for the most part, women after childbirth; it may, however, occur in unmarried females, and even in men. It usually commences a week or two after delivery. The affected limb swells from the hip downwards; the skin has a peculiar shiny white and unnatural appearance, and is hot, firm, and elastic to the touch; and later in the disease "pitting" or receiving the impression of a finger pressed upon it. There is usually some degree of fever and general illness; and the thigh, particularly in the course of the inflamed vein, which feels like a hard cord under the finger, is painful. Pain is increased with every movement of the body, while the limb itself seems paralyzed. Sometimes red patches are seen here and there, and red lines in the course of the veins; but the general whiteness of the limb has given rise to the familiar name of the disease. This is a very serious evil; for although, for the most part, it terminates favourably, yet suppuration sometimes occurs, and the patient is poisoned by the absorption of purulent matter into the current of

the circulation. Sometimes erysipelas occurs, and abscesses form, greatly increasing danger. The affection terminates in about ten or fourteen days, and if favourable, still leaves behind it—sometimes for life—great hardness and swelling of the limb. The vein itself is obliterated, and the blood returns by veins upon the surface, which become greatly enlarged to receive it. The treatment must be directed to subdue the inflammatory action, and leeches in large quantities, hot fomentations, purgatives, the most rigorous confinement to bed, and fever diet are indicated.

CHAPTER XIV.

DISEASES OF THE RESPIRATORY ORGANS.

The Respiratory Organs, considered as the seat of diseases, are thus arranged:—1. the air-passages; 2. the substance of the lungs; 3. the pleura or membrane covering the lungs, and lining the cavity in which these organs are contained; 4. the walls of the chest; 5. the diaphragm or midriff.

The air-passages extend from the larynx, or organ of voice, downwards to every part of the lungs. Immediately beneath the larynx, which forms the prominence on the fore part of the neck called Adam's apple, is the windpipe; this, near the middle of the breast-bone, divides into two branches, termed the great bronchial tubes; and each of these divides successively into branches, continually more and more minute, till they reach the almost imperceptible cavities termed the air-cells—which are, in fact, the blind terminations of the air-tubes. The membrane which lines the whole extent of the air-passages, from the larynx to the air-cells, is a mucous membrane—that is, the same kind of membrane which invests the mouth, the internal ear, and the nose. This membrane, then, and the tissues, particularly the fibrous and muscular tissues, which lie in close proximity to it, are the seats of those diseases which are specifically described as the diseases of the air-passages. Some of these are inflammatory, others spasmodic, others a compound of the inflammatory and spasmodic,—thus, laryngitis is inflammation of the larynx in its several forms; croup, or cynanche trachealis, is inflammation of the windpipe; bronchitis, or cold of the lungs, is inflammation of the mucous membrane of the bronchial system of tubes in general.

Among the principal spasmodic diseases affecting the air-passages are spasmodic croup, also termed bastard or false croup, the asthma of children, and laryngismus stridulus, chiefly confined to the larynx; idiopathic spasmodic asthma, and hysteric dyspnœa;—the spasm, however, in some, if not occasionally in all these affections, being extended, more or less, to the fibres of the muscular walls of the chest. Hooping-cough is another spasmodic or convulsive disease, rarely if ever unaccompanied with some degree of inflammation, particularly the bronchitic. Besides these prominent diseases of the air-passages, some others must be added, less distinctly marked by their external symptoms, and becoming known chiefly by the aid of stethoscopic examination, and pathological scrutiny after death. Among these are collapse of the air-cells, and dilation of the air-cells, often at present termed emphysema of the lungs.

Hæmorrhage from the lungs, or spitting of blood, popularly called the bursting of a blood-vessel, has its seat in the mucous membrane of the air-passages. This, which has been alluded to at page 114, in systematic works, is commonly spoken of under two forms, namely, bronchial hæmoptysis and pulmonary hæmoptysis, or pulmonary apoplexy.

I have first to treat of

Laryngitis—Under which head are several slight affections of so common occurrence as to cause no alarm, as they usually pass away under mild domestic treatment, or even no treatment at all; a common hoarseness—an undeniable form of laryngitis—being sometimes present without any sign of other parts of the membrane besides that of the larynx being affected with cold. But this very circumstance of the trivial character of many of the affections of the larynx, is apt to cause the early stage to be overlooked of one of the most dreadfully fatal diseases to which the human constitution is liable, namely, acute laryngitis. What adds to the liability of neglect in the early stage of this most formidable disease is, that it is not very common, and that it has not been very long known to the medical profession. In the last year but one of the preceding century, General Washington was cut off by this disease within twenty-four hours, and his physicians could not at the time give a name to the fatal malady. Hardly more than forty years ago, Dr. Pitcairn, an eminent London physician of that day, died from the same disease, within a few hours; and his friend, Dr. Baillie, then at the height of his fame, could not name the cause of his death. From the time of Dr. Pitcairn's death, however, this for-

midable affection has been carefully observed, and its symptoms accurately detailed. The inflammation sometimes begins at once in the larynx; and sometimes in the tonsils, like a common sore-throat, and spreads to the larynx. In this last case, the serious character of the new disease is at first particularly apt to be overlooked. The extreme distress which accompanies great tumefaction in the common sore-throat might, at the first glance, make us suppose it impossible even to discover that a new disease had arisen. But in acute laryngitis, when the throat is inspected, it seldom happens that the visible inflammation and swelling are sufficient to explain the extreme distress present as the result merely of inflamed tonsils. Even when the primary disease is common sore-throat, it is almost universally found that the degree of that affection is wholly insufficient to account for the extreme suffering of patients in the acts of swallowing and respiration. Here, then, an important ground is afforded for the suspicion that acute laryngitis has commenced, namely, the existence of extreme distress in respiration and deglutition (swallowing), without any sufficient cause for this distress being discoverable by inspection of the throat. The respiration is apt to be affected in paroxysms; it has a peculiarly harsh sound, as if the patient were blowing into a trumpet of brass. As time proceeds, it becomes more and more laborious; and even the total interruption of it is continually threatened. The breathing is attended with a gurgling noise, and inspiration is protracted and wheezing, as if the air were drawn through a dry and narrow reed. When the patient is asked where the seat of the disease is, he points to the prominence in the neck called Adam's apple, where from an early period a dull uneasiness is felt, increased by pressure upon that cartilage. Sometimes, when the tongue is pressed carefully downwards, the epiglottis—or valve-like cartilage, the office of which in health is to close, during swallowing, the passage of the larynx—is seen red and swollen like a cherry. When the patient coughs, it is with a very harsh, stridulous, husky, abortive sound. The voice is hoarse, or, what is more common, all vocal sound is lost, and the patient speaks merely in a whisper. In the earlier stage the skin is hot and dry, the pulse hard, the face flushed. From the first there is an extreme and unaccountable degree of restlessness and anxiety about the patient. As the disease advances the face becomes livid, the eyes protrude, the pulse weak and intermitting; the patient is reduced to the extremity of unquietness; he makes signs that he wants air; he points to the windows, evidently desiring that these

should be opened; he feels sleepy, but if he falls asleep the sense of suffocation soon arouses him: he soon, however, begins to lose the distinct sense of what is passing around; and a low muttering delirium follows—the precursor of the fatal event.

After this account it is indeed needless to add how little time should be lost in summoning a skilful practitioner whenever seemingly slight sore-throat or hoarseness becomes accompanied with such an uneasy restlessness as we have seen commonly attends the beginning of this most terrible disease.

It is easy to explain why this disease, even when confined to a small part of the larynx—namely, the membrane lining the narrow passage through which the air rushes in respiration—is productive of such distressing symptoms, and proves so quickly fatal. Inflammation thickens mucous membranes; it also gives a tendency to effusion of serous fluid in the sub-mucous tissue, that is, the cellular tissue lying beneath the mucous membrane. The glottis, or aperture of the larynx, in the full-grown man is nearly triangular in form; its greatest dimension from before backwards, in its extreme dilatation, is hardly so much as an inch, and its greatest breadth less than half an inch. It is easy, then, to understand how prejudicially these small dimensions may be encroached upon either by the thickening of the proper mucous lining under inflammation; or by its projection from its ordinary site by the accumulation of fluid in the subjacent tissue; or by both effects simultaneously taking place. Under such circumstances expiration is performed more freely than inspiration; because in inspiration the thickened mucous membrane is drawn inwards, acting as a valve upon the upper part of the windpipe. Thus acute laryngitis kills by throttling; that is, by shutting up the free passage of air into the lungs—the patient, in short, dies for want of breath.

But is there no remedy? It is unquestionably a disease which no person untrained to medicine should attempt to treat, if it be possible to procure a medical man. It requires all the skill of the most experienced to afford even a chance of rescue, and that only when timely aid is sought. Of a spontaneous cure there is no ground for hope. The remedies which have proved successful in some instances have often failed even when employed under circumstances, to all appearance, equally favourable.

When the disease is seen at a sufficiently early stage of its progress, blood-letting is a proper remedy. So long as there is strong inflammatory fever, the skin being hot, the pulse firm and full, the cheeks red and the lips florid, no obstacle should be thrown in the way

of free abstraction of blood from a vein. If, on the contrary, the system be already beginning to sink under the effects produced on the blood by the interruption of respiration—that is to say, if the skin be hardly warm, the face pale or of a lead colour, the lips livid, the pulse small and feeble, and if the thoughts have begun to waver—the time for blood-letting has passed by. Even the local abstraction of blood cannot in this stage be practised with any advantage. Some prefer leeches even in the earlier stage to general blood-letting—that is, to blood-letting from a vein of the arm—but there is an objection to leeches, as being apt to give a tendency to the effusion of serum beyond the spot to which they are applied; so that it is not impossible, while they contribute to subdue the inflammation, that they may nevertheless do more injury than good, by increasing the œdema or dropsy of the glottis. The local abstraction of blood is conveniently obtained by cupping at the back part of the neck. When blistering seems desirable, it is better, for a like reason, to place the blister on the upper part of the breast than on the neck. This, indeed, is a good general rule in cases of diseases of the throat; for a blister on the neck is a most severe remedy, creating the greatest suffering in many constitutions, and among other inconveniences being more apt to give rise to strangury—that is, severe irritation of the urinary organs—than a blister on most other parts of the body. The use of purgatives should not be omitted. But when the disease has already reached its advanced stage, the only hope lies in a surgical operation. This operation consists in making an artificial opening for the purpose of respiration below the seat of the obstruction produced by the inflammation. When it is certain that the disease is simple acute laryngitis, and the first stage is already past, the operation should be resorted to without the least hesitation. It is beyond doubt that many lives have been thus saved. It is, however, carefully to be remarked, that it is not every kind of oppressed breathing that will be benefited by this operation, and that the conditions requisite for its success are in particular afforded by simple acute laryngitis, in which the inflammation is very often confined to the parts immediately adjacent to the aperture or chink of the larynx—the windpipe itself and the bronchial ramifications being entirely free from disease. When there is disease beneath the lowest point at which the air-passages can be opened from without, nothing but discredit can result from the attempt to operate. The operation is often termed bronchotomy. This term at first seems to imply that the bronchi, which commence on a level with the middle of the breast-bone, can be opened;

but this is not the case, as the bronchi cannot be opened during life. Bronchotomy, then, is used conventionally, and for the sake of convenience, as a general term, including all the surgical operations which can be performed on the air-passages. Bronchotomy thus includes laryngotomy and tracheotomy; the former being the term employed when any part of the larynx is opened, the latter when any part of the windpipe is opened. The description of these several operations belongs to surgery.

Chronic Laryngitis.—Under the head of chronic laryngitis, numerous maladies have been confounded; namely, true chronic inflammation of the mucous membrane, follicular disease of the larynx, ulceration of the mucous membrane, polypous growths on the mucous membrane, abscess adjacent to the larynx, disorganization of the cartilages of the larynx, and caries of the adjacent bones. Of these our limits permit us to notice only the three first mentioned.

True chronic laryngitis, or chronic inflammation of the mucous membrane, may or may not proceed to ulceration. Thus the symptoms of chronic inflammation of the larynx and ulceration are properly different stages of one disease. The symptoms are hoarseness, cough, tenderness of the region of the larynx on pressure, some difficulty of inspiration, never entirely absent, but coming at times in severer fits. When such constitutional symptoms as fever, marked by coldness of the surface, followed by heats and sweating, especially night sweats, and emaciation, are added, as seen in the severer forms, the disease, whether with or without ulceration, has sometimes been called laryngeal phthisis, or laryngeal consumption; and, in truth, this severe form of chronic laryngitis is most commonly merely a part of common pulmonary consumption.

When chronic laryngitis is not combined with such maladies as syphilis and pulmonary consumption, a cure is sometimes effected by local blood-letting, by means of leeches or cupping, mercurial alteratives, and counter irritation.

Follicular Disease of the Larynx is a morbid state of the minute glandular bodies spread over various parts of the mucous membrane of the pharynx, larynx, and windpipe. It has attracted especial attention of late years, particularly owing to the investigations of Dr. Horace Green, of New York. This disease may be either simple or complicated with other diseases. In the simple form, soon after the minute glands have taken on a morbid action, an increase of the ordinary secretion is observed, accompanied with a feeling as if something were sticking at the top of the windpipe. This symptom is

aggravated by exertion of the voice; the secretion is adhesive or viscid, and alkaline; while, instead of lubricating, it plainly irritates the parts which it covers. The character of the voice is altered; and this change is more marked in the cases in which the parts immediately concerned in voice, as the vocal cords and ventricles of the larynx, are the seat of the disease. This is what of late has been termed "Clergyman's sore-throat." Mental depression generally accompanies the disease, and is one of the marks by which its severer forms are distinguished from tubercular consumption, in which it is well-known a particular buoyancy of spirits and hope, in spite of all appearances, prevail.

This disease requires, in particular, the attention of a skilful practitioner. The treatment is general and local. Among the general remedies are the iodide of potassium, called also hydriodate of potassa, and various preparations of iron—narcotics, sedatives, and even alterative doses of mercury. Among the local remedies, the most remarkable is the direct application of a strong solution of lunar caustic by means of a sponge attached to a piece of whalebone. The solution is used of great strength, but cannot be applied by any person unacquainted with the anatomy of the parts. There can be no doubt that much benefit has resulted from this direct application to the larynx; but there is reason to fear that mischief may have occasionally arisen from the indiscriminate application of a fashionable remedy.

The same kind of local treatment has been of service in several other diseases of the larynx, but the extent to which it should be carried is still uncertain.

Croup, or Exudative Inflammation of the Windpipe, differs from acute laryngitis not only in its seat, but also in the nature of the inflammation. In acute laryngitis, as we have seen, the danger arises from the thickening of the mucous membrane and the infiltration of thin fluid into the interstices of the subjacent loose tissue. In croup an exudation takes place on the surface of the mucous membrane of the windpipe, hence it is properly termed exudative inflammation of the windpipe. Croup is a disease of early life—it affects male children oftener than female—it is much more prevalent in some situations than in others. It is most common near the banks of lakes and rivers, and near the sea-coast. In high and dry situations it is less known. This disease is often preceded by the symptoms of a slight cold. As hoarseness is not a very constant symptom in the colds of children, it is reckoned suspicious in districts where croup prevails. The essential signs of croup are difficulty of breathing and

sonorous inspiration. The cough is peculiar, and is described as brassy—that is, like the sound that may be produced by coughing through a brazen trumpet. The voice is not merely hoarse, but gruff; sometimes, as in laryngitis, the voice is wholly lost. There is, besides, a flushed face, a hot skin, a frequent and hard pulse, and thirst. As the disease advances, the skin becomes dusky, the pulse feeble and irregular, the extremities cold. The cough is no longer loud and clanging, but husky and inaudible at a short distance, while the voice is heard only in whispers. The head is thrown back, the nostrils are strongly dilated at each breath; the face is pale or livid and swollen, the pupils of the eyes expanded. These symptoms indicate the worst result. The soles of the feet become black; there is drowsiness; often tossing of the arms; a convulsive grasping of objects within reach; there is gasping—then death usually after an inspiration.

Croup, like laryngitis, runs its course rapidly. It may prove fatal within from twenty-four to forty-eight hours, or be protracted for five, six, or even ten days. Death takes place by suffocation, chiefly owing to a concrete membranous-like deposit, which occupies the cavity of the windpipe. Portions of this substance are sometimes coughed up before death; and when the whole of it is expectorated, recovery may take place. This exudation, or deposit, sometimes extends far into the bronchi, or air-tubes, and a purulent secretion is even sometimes found in their minuter ramifications. Hence in croup there is little hope of relieving the distress of breathing by a surgical operation.

True croup is to be distinguished with care from acute laryngitis, and also from spasmodic or false croup, and from pulmonary catarrh, or cold of the lungs, when accompanied with spasm of the larynx. To make this diagnosis, or discrimination, all the skill and experience of the medical attendant is often no more than sufficient. And it undoubtedly sometimes happens, that diseases of far less severity are carelessly taken for croup, and credit given for the cure to remedies wholly ineffectual when the real disease is present. This, indeed, is a kind of fallacy which especially besets young and amateur practitioners. The distinctive character of the only disease entitled to be called croup is the tendency to the exudation of the membranous-like substance above referred to.

Croup cannot be safely intrusted for its treatment to any one but an experienced medical man.

The three great remedies are blood-letting, tartarized antimony, and calomel. In the early state, when the system is still vigorous,

the blood being not yet poisoned by the retention of carbonic acid, owing to the failure of respiration, the loss of blood is advisable—by the lancet in more advanced children, by leeches in the younger. The quantity must be determined by the practitioner.

An emetic is useful at the commencement; the tartar emetic should afterwards be given in repeated smaller doses, to assist the effects of blood-letting in subduing the inflammation.

Calomel has the very best effects. It is pushed to an extent such as is not safe except in the hands of a trained practitioner.

Its effect is not to salivate, as in adults, but to bring away copious green stools, like spinach.

Even in the advanced stage of this disease, when the abstraction of blood is wholly inadmissible, it is believed that tartarized antimony is capable of accomplishing a cure: when the antimony acts severely on the bowels, it may be combined with small doses of the syrup of poppies.

Calomel has, undoubtedly, great power over exudative inflammation; even in the advanced stages, particularly when, from any cause, the tartarized antimony cannot be carried far, it should not be neglected.

Blisters should only be used with the sanction of a medical man.

Bronchitis — Catarrh — Coryza — Cold — Influenza. — All the words placed at the head of this section in some measure answer to the common English term cold. Bronchitis is a comparatively new word, introduced because it was found that some of the severer affections of the chest, formerly referred to pneumonia, or inflammation of the substance of the lungs, are in reality inflammations of the mucous membrane lining the air-passages. Thus, though in a strictly pathological sense both catarrh, the old term, and bronchitis, the newer term, signify diffused inflammation of the mucous membrane of the air-passages; yet, by prevalent usage, catarrh, at present, is employed to denote the slighter affections of this membrane, and particularly those which begin with coryza, or cold of the head, and are limited to cough, hoarseness, and other symptoms, indicating a diffused slight inflammation, not extending deep into the ramifications of the bronchi,—while bronchitis, whether acute or chronic, is reserved to signify deep-seated or pulmonary catarrh.

Inflammation of the mucous membrane of the air-passages is of such universal occurrence, that probably not one person in ten thousand passes over twelve months without suffering more or less; and some are so peculiarly predisposed, that they are seldom alto-

gether free from this troublesome visitor. Unless very severe, colds are generally permitted to run their course, or are submitted to some harmless domestic remedies, which have little effect, either in one way or another. In the robust, this is the best thing that can be done, as the slighter colds are seldom of long duration; in the delicate, however, or under any circumstances when the attack is severe, colds in the chest should not be neglected, as they are very liable to become chronic, and ever ready to be developed into inflammation of a serious character. Cold when severe is called bronchitis, but the same treatment is applicable to both, with this exception, that pure bronchitis requires medical care; there are two methods of cutting short this annoying affection, however, which those who are subject to it may feel disposed to try. The first is a full dose of opium on going to bed at night. On the first threatening of the symptoms, this will generally put a stop to them; twenty drops of laudanum will be sufficient, and the feet should be put in hot water to promote perspiration. This plan should be tried by adults alone, and by those who are aware that opium does not produce any unpleasant effects upon them; it should be avoided by those who have a tendency of blood to the head, or who have suffered from inflammation of the chest; and it has this disadvantage, that if not successful, it is liable to aggravate symptoms. The second plan, which was suggested by Dr. Williams, consists in total abstinence from fluid of every description until the complaint has disappeared. Those who have tried it speak highly of its efficacy, though it requires some little fortitude to put it into execution; to the very impatient, Dr. Williams allows a table-spoonful of tea or milk, twice a-day, with the meals, and a wine-glassful of water in the evening. A sore throat may sometimes be checked by a full dose of Dover's powder at bedtime, upon the first suspicion of its appearance; eight or ten grains may be taken by an adult, and perspiration promoted by the warm foot-bath; as this preparation contains a considerable proportion of opium, it should be used by adults alone, on their own responsibility, and with caution. An emetic also will often cut short both cold and sore-throat. The general management of a severe cold consists in confinement to an equable temperature, abstinence from animal food and stimulants, and gentle diaphoretic medicines. If the patient will consent to remain in bed for a day or two, his recovery will be accelerated; if not, his apartment must be kept moderately warm, and if he leaves his bedroom during the day, it must be prepared by a fire for his reception at night. A gentle aperient, such as castor-oil, a Seidlitz

powder, &c., having been given, two table-spoonfuls of the following mixture may be taken every three or four hours: spirit of Mindererus, three ounces; antimonial wine, two drachms; nitre, two scruples; water or camphor mixture, five ounces. At night, the warm foot-bath should be used, and if the skin be not soft and perspiring, five grains of Dover's powder, with two of James's powder, may be taken. If there is a feeling of weight and tightness in the chest, a mustard plaster should be applied; and if the cough is dry and hard, the dose of antimonial wine may be gradually increased to four drachms in the above mixture. When all feverishness is gone, if the cough still seems to be disposed to be obstinate, with profuse expectoration, a table-spoonful of the following may be taken three or four times a-day: ipecacuan wine, tincture of squills, of each one drachm; syrup of poppies, four drachms; water or almond emulsion, to make up six ounces; or, olive oil, oxymel of squills, and syrup of poppies, of each one ounce: dose, one tea-spoonful when the cough is troublesome. The treatment of sore-throat should be much the same, but should be commenced by a brisk dose of Epsom salts. The more incessantly the throat can be gargled with very hot water, the sooner is the disease likely to yield; should this be inconvenient, a good gargle may be made with two or three drachms of nitre to eight ounces of water. Mustard plasters to the throat are often useful; they should be inclosed between two pieces of fine linen or cambric. In relaxed sore-throat, the following gargle may be employed: tincture of capsicums, six drachms; syrup of roses, one ounce; rose-water, seven ounces; or decoction of oak-bark with alum, in the proportion of one drachm to about eight ounces.

The liability to catch cold may be very much diminished by the use of the cold shower or sponge bath, by which the system is hardened against sudden atmospheric changes; those who are liable to sore-throat should wear a very light and narrow neckcloth, and in the house a single turn of ribbon will suffice; such changes, however, must be made gradually, and commenced in warm weather.

Influenza.—The extraordinary suddenness and rapidity with which this disease sometimes overruns large districts and cities, prostrating almost simultaneously a large proportion of their inhabitants, procured for it, from the Italians, the name by which it is now familiarly known in this country, of influenza, or "the influence," from the belief that some agent of an unusual and incomprehensible nature must be concerned in its production. And such, in fact, is the case; for in spite of the researches which have been made, from the period

of the sixteenth century when it was first observed until now, no tenable theory has as yet been advanced to account for its most striking phenomena. Its epidemics have occurred at all periods of the year, though most frequently in spring and autumn; and have frequently been preceded by considerable atmospheric vicissitudes, though not of such an uniform or definite character as to entitle them to be considered as other than coincidences. Its symptoms, as many may be aware from experience, are as follow:—the patient feels languid and chilly, perhaps has a fit of shivering, succeeded by a flush of heat; shortly after this, there is decided feverishness, accompanied by dull, heavy pain over the forehead; sneezing, watering of the eyes and nostrils; soreness of the throat and windpipe; dry cough and oppression of the breathing; but its most marked characteristic is the complete prostration of strength, quite out of proportion to the other symptoms, which occurs at the very commencement of the disease, and often remains long after the others have disappeared. By this, as well as by its epidemic character, it may in general be readily distinguished from ordinary catarrh, with which it is most liable to be confounded. The pulse during these attacks is weak and rapid; the tongue white and clammy; there is a total indisposition to food; sometimes nausea and vomiting, less frequently diarrhœa. An exaggerated idea has got abroad as to the mortality of influenza, which has even been compared with that of cholera. In the latter disease it is probable that nearly one-half of those attacked have fallen its victims; while in influenza a fatal result is rare, except in the aged, whose feeble spark of life is readily extinguished by any exhausting complaint, or in those debilitated by previous disease, especially of the heart or lungs. Its absolute mortality, which has undoubtedly been great, is easily explained by the immense number of those who suffer from it during an epidemic. In the aged or unhealthy, therefore, it should always be regarded with suspicion; even in the robust, from its liability to be complicated with internal inflammation of a serious character, medical advice should always be procured when there is much pain in the chest, oppression of breathing, hurried respiration, or a dusky colour of the lips or face. In mild cases little treatment is necessary; the patient should be confined to bed, a mild aperient, such as a table-spoonful of castor-oil, should be administered, and the diet should be confined to slops until the severity of the attack has declined, which will probably take place within the first four days. If there is much heat and dryness of skin, two grains of James's powder, with five of Dover's powder, may be given to an adult three

times a-day, along with two table-spoonfuls of the following mixture: nitre and ipecacuan wine, of each half a drachm; spirit of Mindererus, two ounces; water or camphor-julep, four ounces. Weight and oppression of the chest may be relieved by a large mustard poultice; and if the cough is troublesome, and the expectoration difficult, one drachm of antimonial wine may be substituted for the ipecacuan wine. To children, one grain of James's powder, without the Dover's powder, may be given, and the dose of the mixture should be reduced to a dessert, or one table-spoonful, according to the age. This does not apply to infants, who ought always to have medical attendance. Should the cough be tedious and troublesome, it may be treated as bronchitis or cold (page 125). The debility will often disappear when the subsidence of the disease permits a more liberal diet; but if it should prove persistent, it may generally be removed by the use of some mild tonic, such as infusion of calumba or cascarilla. The latter is prepared by macerating an ounce and a half of the bark in a pint of boiling water for two hours, and straining; five grains of carbonate of magnesia, or dried carbonate of soda, may be added to each dose, which is half a wine-glassful, three times a-day, before meals. At the same time the diet should be nourishing and digestible, and a glass of port wine may be taken at dinner by those who have been accustomed to it in health.

Spurious Croup, Laryngismus Stridulus, &c. — The grand distinction between true croup and those forms of disease which, under various names, have often been regarded as closely approaching to croup, is, that while there is distinct symptomatic fever in the true, there is no such constitutional disturbance in the spurious disease. Spurious croup, in all its forms, is free from inflammation; and there is no tendency to exudation, by which a more permanent obstruction of the air-passages can be effected.

This disease most commonly seizes the patient all of sudden; it occurs often in the night, sometimes immediately after an ordinary or full meal, sometimes in the infant, even during the act of sucking. There is a violent struggle to inspire, and when, at length, that act takes place, the breath is drawn in with a shrill whistling or crowing sound, much resembling the inspirations of true croup, or of hooping-cough; in short, the inspirations take place through a narrowed aperture of the glottis of a temporary character.

These symptoms decline or entirely cease after a short time, and again become renewed in the form of paroxysms. Along with the symptoms above enumerated, there is, though by no means constantly,

a contracted state of muscles of the upper or under extremity of one side, as of the thumb, fingers, or wrist, or, even more commonly, of the ankle and toes, giving to the foot an appearance not unlike that of a club foot. This spasmodic inversion of the foot, however, is not an uncommon form of spasm in various diseases of childhood; and it may be remarked, along with other spasms, in the boy brought to the disciples, in the lower division of Raphael's well-known picture of the Transfiguration.

This disease has been considered rather as a temporary paralytic affection than as a spasm; but more recent experience appears to confirm the original notion of its being a spasm: it belongs to the order of spasms by reflex action. Irritations, such as that attending dentition, an over-full meal, or disordered secretions of the stomach and bowels, disturb the central organs of the nervous system, and hence arise irregular influences transmitted to the larynx, through its nerves. It is often connected with enlargement of the glands of the neck; but it does not appear, as Dr. Ley ingeniously taught, to be directly dependent on such glandular swellings; his book, however, is curious, and deserves to be perused. Dr. Ley borrowed the name, laryngismus stridulus, from Dr. Mason Good; this name, however, has few recommendations in its favour. Child-crowing is a good English name; spasmodic croup is one of the least objectionable. The term asthma infantum is objectionable, as having been applied to various affections of the chest. Thymic asthma is a name common in German works, but it involves a theory of its origin of too limited a character. The names spurious or bastard croup are names sufficiently expressive of its distinctive character.

One of the best remedies during the paroxysm is a vomit, such as one or two tea-spoonfuls of the wine of ipecacuan; as to the remaining part of the treatment, that must depend on the particular kind of irritation by which the predisposition or tendency to the disease is kept up; measures, in short, are to be taken to remove whatever disorder of health the child may be found labouring under.

Asthma.—Asthma is a particular form of difficulty of breathing. The term, in common language, is by no means correctly employed, being made use of to denote almost every kind of chronic disease in which there is laboured breathing. Dyspnœa is the term which signifies difficulty of breathing in general. Dyspnœa may arise from a multitude of causes, and is present in a great many diseases. Dyspnœa, or common difficulty of breathing, is present,—1st, in diseases of the larynx and windpipe, accompanied with impediments

to the free passage of the air; 2ndly, in diseases of the bronchi and air-cells; 3rdly, in diseases of the substance of the lungs; 4thly, in diseases of the cavity of the pleura and walls of the chest; 5thly, in diseases of the midriff; 6thly, in diseases of the abdominal cavity; 7thly, in diseases of the heart and great vessels; and 8thly, in diseases of the nervous system.

Thus dyspnœa, or difficulty of breathing, corresponding to our English term shortness of breath, is plainly not a disease, but a symptom of diseases of the thorax and adjacent parts. It is common, at present, to describe asthma also as a symptom, and to refuse it a place among diseases; but the following simple considerations show asthma to be a true disease. In the first place, a typical form of asthma may be thus described: a person who had gone to bed in his ordinary state of health, which is, perhaps, not altogether robust, wakes in the night with a sense of oppression and tightness in the chest; he is breathing with a loud wheeze; he feels it impossible to remain reclining; he sits up in bed; he calls up the house, and orders the windows of his bed-room to be opened; he rests on his hands, throwing up the shoulders; his whole chest is in violent action; his nostrils are alternately dilated and contracted; and his features are distorted, and exhibit a peculiarly anxious expression. When this distressing state has continued for some time, often for several hours, the symptoms begin to remit, and this remission is not unfrequently attended with some cough and free expectoration of mucus. The recovery is often very complete, and no return takes place till the following night, about the same time; the paroxysm thus often returns several nights in succession, and then, for the time, the disease disappears.

In some persons, who have been affected in this manner for a considerable period of time, the disease entirely ceases, and they remain free from any disease of the chest for the rest of their lives, or at least for many years; and while it is very true that persons subject to incurable diseases of the chest are much more frequently affected by the paroxysm of asthma than those who are to recover their health, yet it often happens that such persons are affected with the asthmatic paroxysm only in the early stage of such incurable diseases, and afterwards may live for a long period, suffering, indeed, from disturbance of the function of the lungs, but not liable to the paroxysm of asthma. The manifest conclusion then is, that asthma, considered as a paroxysm of laborious breathing, is a disease which is sometimes simple, purely functional, or idiopathic, in the

language of pathology, while, at other times, it is complicated with previous diseases.

The diseases with which the asthmatic paroxysm is most frequently complicated are chronic states of bronchitis, in which the mucous membrane of the air-tubes has undergone various alterations of structure, and dilatation of the air-cells—that form of pathological alteration to which modern pathologists, without much regard to accuracy, apply the term emphysema of the lung.

The great difficulty in the treatment of asthma lies in the complications under which it so often appears.

In the treatment of the paroxysm, if the stomach and bowels be manifestly disordered, it will sometimes be proper to administer a vomit, or an enema. Opium is commonly resorted to with advantage, either in the form of laudanum, or of the solution of the muriate of morphia. It was formerly the general practice, and is a useful practice, to combine laudanum with sulphuric ether, in a draught with some carminative, such as peppermint-water; for example, forty drops of laudanum, a drachm of sulphuric ether, and a wine-glassful of peppermint-water, more or less diluted. If the patient has been previously unaccustomed to swallow sulphuric ether, he will find it more easy to swallow such a draught while the nostrils are compressed with the fingers; the addition of a tea-spoonful of calcined magnesia will sometimes render this draught much more efficacious. Instead of the sulphuric ether, the compound spirit of sulphuric ether may be substituted; a similar compound medicine is obtained by combining the sweet spirit of nitre with the common paregoric, and adding a carminative in the proportion of one drachm of the sweet spirit of nitre, and half an ounce of the paregoric, with as much of any aromatic water as the stomach can easily receive.

If there be any objection to the ethers on account of inflammatory complications, the antimonial wine should be united with the opiate, or a pill of one or two grains of opium given with from one-eighth to one-fourth of a grain of tartarized antimony.

A hot poultice, covered on its surface with mustard, and applied to the chest, often gives sensible relief, while other remedies are being provided.

Chloroform promises to be of use either inhaled or administered by the stomach, to the extent of ten or twenty drops; but as this remedy is still little understood, it should not be used without the sanction of a medical man.

Tobacco is a popular remedy in asthma; but it is to be feared it is often carried to an injurious excess. Stramonium is safer, and often equally beneficial when smoked like tobacco. Savory and Moore, of Bond Street, prepare it for this purpose in the form of cigars.

The fumes of burning nitre are sometimes very serviceable; and are easily procured by dipping blotting-paper in a strong solution of nitre, and then drying the paper, after which it burns freely on being ignited. The lobelia inflata has gained some reputation in asthma. Strong coffee is sometimes very useful; and inhaling the vapour of hot water from a deep jug held below the mouth and nostrils is often beneficial.

The general health must be attended to.

Hooping-Cough, or Pertussis, is a disease so well characterized by the peculiar whoop or back-draught which attends the cough, as to be equally recognised by the public and the profession. The disease commences with the symptoms of a common cold; while the cough, which at first has nothing distinctive, after a period of about ten days assumes its peculiar character. The cough of hooping-cough occurs in repeated paroxysms, each paroxysm consisting of a number of successive expiratory movements, after which a long inspiratory act, attended with the peculiar whoop of the disease, takes place; then recur the expiratory movements, and the inspiratory act with the whoop,—and so on in alternation till a quantity of glairy mucus is forced up, with or without an accompanying act of vomiting.

The disease continues from six weeks to three months; sometimes it is terminated in three weeks, and occasionally it is prolonged to six months or more. When the child continues free from fever, and the respiration is calm during the intermissions, the appetite and digestion being natural, there is no need for apprehension. Hooping-cough, under the opposite circumstances, often lays the foundation of other diseases, such as hæmoptysis, consumption, and the various forms of asthma and dyspnœa.

It plainly spreads by contagion, or at least by intercourse with those already affected.

The pathology of hooping-cough—that is, the essence of the disease—is still unascertained. It probably depends on some peculiar mode in which the nervous system suffers irritation; but what is very inexplicable is, the circumstance that the nervous system should be but once susceptible of that irritation in the course of life.

To palliate the severity of the symptoms, and to prevent other affections, particularly inflammatory affections, arising to complicate

the disease, are the great indications for treatment in hooping-cough. Our object, in short, as some physicians express it, "is to keep hooping-cough—hooping-cough."

The patient must be secured against the effects of cold, and the diet must be put under such regulation as are suitable to a state in which inflammatory action is threatened. The due regulation of all the functions is to be attended to; and aperients are to be employed to keep the bowels in proper order.

When the disease is moderate and free from complications, little treatment is required. Some slight counter-irritation to the chest, and the internal use of ipecacuan, to the extent of one grain, or one grain and a half, three or four times a-day, will often be sufficient to keep the bowels regular, to promote expectoration, and to relieve the chest from too great distress.

When the fit is not succeeded by free expectoration, an emetic is necessary. Ipecacuan, in the form of powder or of the wine, answers well.

Sometimes opiates are necessary, owing to the violence of the paroxysms. Antimonial wine combined with laudanum is an old and well-tried remedy of this sort, a few drops of each being given for a dose, according to the age of the patient. Carbonate of soda is sometimes advantageously added to the other remedies—for example, two grains in each draught.

Many remedies have obtained a reputation in hooping-cough, but all of these are not safe, and most of them are unnecessary. Alum in five-grain doses three times a-day has been much praised. An ointment made of one drachm of extract of belladonna, rubbed up with an ounce of lard, may be applied to the breast and shoulders, and probably not without benefit, in severe cases. One of the best counter-irritants is croton-oil, one drachm, mixed with one ounce of olive-oil, to form a liniment to be applied to the chest night and morning till a papular eruption comes forth; then it is to be rubbed on some other part of the chest, so as to bring out a new eruption while the first is fading away.

The inhalation of a small quantity of chloroform from a sponge, the moment the paroxysm begins, is said to be very efficacious; but this should not be attempted except under the direction of a medical man.

When the disease has already lasted for some weeks, change of air and scene is very useful. Preparations of iron and other tonics are often requisite, as the severity of the chest symptoms declines, merely for the purpose of restoring the constitution to its original

vigour. The muriated tincture of iron, to the extent of ten to twenty drops twice a-day, answers well.

Hæmoptysis has been treated of at page 114.

Collapse and Dilation of the Air-cells, and other pathological states of the mucous membrane, which are, however, quite beyond household management, require for the palliation of the symptoms to which they give rise various sedative and expectorant remedies, in common with chronic diseases of the chest in general.

I have now to pass to the diseases of the Lungs themselves; their investing membranes; and of the diaphragm;—and in a work such as this,

Pneumonia and Pleurisy, with the inflammatory and rheumatic affections of the walls of the chest, and also of the diaphragm or midriff, are better considered together than apart. It is true each disease may occur separately, but two or more of them are often conjoined; nor is the discrimination of each always practicable, even if it were necessary.

In all these diseases there is pain in some part of the chest, and impediment to the breathing. The pain is most acute in pleurisy, or the inflammation of the membrane covering the lung and lining the cavity of the chest, and in pleurodynia, or the rheumatic affection of the muscles of the chest; also in the rarer affection, rheumatism of the fibres of the midriff or diaphragm.

In inflammation of the substance of the lung, which is by far the most serious disease, unless when confined to a small portion of the organ, the pain is of a duller character, the oppression however being greater. When there is sharp pain of the chest, the first step is to discover what it indicates. If there be no cough, and hardly any fever, there is a strong presumption that it is rheumatic—that is, that it is a muscular pain. This presumption will be much increased if it often shifts its seat; if it be much increased in the act of turning the body; and if there be at the same time other rheumatic pains elsewhere in the body. When a rheumatic affection of the muscles of the chest is not extensive, the ordinary breathing is not much impeded; but when a full inspiration is made there is an instant check, occasioned by the suddenly increased acuteness of the pain, as the affected fibres are brought into stronger action. In what may be called a regular attack of pleurisy, there is distinct fever, and the patient cannot take a full breath, however slowly and cautiously, without cough. Thus, were all the cases of these two diseases met with of this regular character, there would be no difficulty in the diagnosis; the regular attack of

pleurisy being accompanied with cough and fever, that of pleurodynia, or chest-rheumatism, being mere pain without either fever or cough. But the rheumatic attack may supervene on some chronic malady of the chest, attended by cough and some occasional febrile disturbance, so that a difficulty arises; and it is in such cases that a large experience in the sick-room gives so great an advantage over the most extensive book-knowledge of diseases. We shall see presently, however, how the stethoscope may be made use of to solve such difficulties—in short, how a knowledge of this instrument may be made to stand in lieu of long experience; but however long the experience and accurate the observer, I do not exaggerate when I affirm, that diseases of the lungs cannot be satisfactorily treated by one to whom the practical use of this instrument is not habitual. But let us first attend to that form of rheumatism which attacks the fibres of the diaphragm or midriff. Rheumatism of this part, like that of the outer wall of the chest, is usually without fever and without cough. The pain strikes through the chest; and there is an instant catch of the breath in the same region when any sudden effort is made. If the ordinary breathing be examined more particularly, it will be found to be performed chiefly by the ribs, and that the fore part of the trunk over and below the stomach rises in inspiration less than usual, or not at all. This is easily understood. Ordinary breathing in health, particularly in the male, is performed chiefly by the diaphragm; but when the diaphragm, which forms a muscular partition between the lungs and the abdominal organs, descends in inspiration, it thrusts out the abdominal organs so that the anterior wall of that cavity is protruded in ordinary inspiration. When, however, the fibres of the diaphragm become the seat of rheumatism, this part takes a much less active share in ordinary respiration; the outer walls of the chest being in such cases called into greater activity to supply its place. Respiration by the diaphragm is termed abdominal breathing—that by the outer walls of the chest, thoracic breathing. And the comparative predominance of the one or the other of these two kinds of breathing affords a most important basis for the discrimination, not merely of chest-rheumatism from midriff-rheumatism, but of diseases affecting the chest in general from diseases affecting the abdominal cavity. If an acute inflammatory disease be above the diaphragm, abdominal breathing will go on as usual; but if such a disease be below the diaphragm, abdominal breathing will be diminished or suspended, while thoracic breathing will be proportionably increased.

Sometimes it is necessary to distinguish acute inflammation of the liver from pleurisy. In both there may be acute pain of the right side; in both impediment to the respiration; in both cough; and in both considerable fever. But in inflammation of the liver the diaphragm does not freely descend; while in pleuritis thoracic breathing is usually sensibly diminished on the affected side. In inflammation of the diaphragm itself, which appears sometimes to occur independently of rheumatism, the absence of abdominal breathing must be still more striking.

Such, then, is an outline of the common grounds of discrimination between the several inflammatory affections in or near the chest, attended, under ordinary circumstances, with acute pain,—namely, pleurisy, pleurodynia, rheumatic and general inflammation of the diaphragm, and acute inflammation of the liver.

It remains, however, to mention some of the particulars by which pneumonia or inflammation of the substance of the lungs is distinguished from pleurisy. It has been already said that the pain in pneumonia is of a duller character; but that is hardly a sufficient ground of discrimination. The symptoms common to both diseases are pain in the chest, cough, impeded breathing, and fever. In pleurisy the cough is dry, and there is no expectoration till towards the termination of the disease; in pneumonia the cough, though dry at the very commencement, in general after a few hours shows a characteristic expectoration. This expectoration may be described as rust-coloured and viscid. In pleurisy the respiration is often not much affected, unless by the pain when the breath is more fully drawn. In pneumonia the breathing is oppressed, and in severe cases the patient cannot lie down, while the laborious nature of respiration is marked by turgescence and lividness of the face. These two diseases are often conjoined—and then there are the symptoms of pneumonia combined with the acute pain which attends pleurisy.

By the introduction of the stethoscope a great improvement has been made on our knowledge of chest diseases; not, however, without some attendant confusion. For the stethoscope discloses the presence of some such slight forms of pneumonia and pleuritis as are insufficient to produce the ordinary symptoms by which these two diseases were originally characterized. Hence it happens that general precepts, for example, as to the treatment of these two diseases, originally founded on the exclusive consideration of those severer forms which make themselves known by prominent general symptoms, are not always equally applicable to those slighter forms disclosed only by the stethoscope.

This explains to us why pleuritis and pneumonia are not so universally regarded at present as very dangerous diseases, requiring the most prompt and active treatment, as was the case in former times. It should put us on our guard also against believing that the same slight treatment which is often sufficient in a pneumonia or pleuritis discovered only by the stethoscope, will be adequate to cure such severe diseases as come exclusively under the old terms pneumonia and pleuritis.

The peculiar stethoscopic sign of the first stage of pneumonia is a sound heard during inspiration over the affected part resembling the bursting of very minute bubbles. In the corresponding stage of pleurisy the sound of the patient's voice as heard through the stethoscope, placed over the affected part, is like the goat-bleat, or like the peculiar squeak in which the dialogue is carried on in the exhibitions of Punch. In the rheumatic affections of the muscular fibres no such signs are discoverable.

In the second stage of pneumonia the respiration altogether ceases to be heard over the affected part; while as the disease subsides the peculiar crepitating sound returns, and finally gives place to the respiratory murmur of health.

As pleurisy advances the goat-voice can no longer be heard, the sounds of respiration being at the same time undiscoverable, while that part of the chest gives a dull sound on percussion.

These few hints will suffice to show the importance of the indications supplied by the stethoscope, though much practice is requisite in connection with opportunities of seeing the *post-mortem* appearances in cases examined during life, to make a trustworthy auscultator.

In the slighter forms of these inflammatory affections of the chest counter-irritation is the appropriate treatment. The hot mustard cataplasm, applied for several evenings in succession, will sometimes remove troublesome pains of the chest. If more obstinate, a fly-blister should be had recourse to. If by this means the pain be not wholly removed, the croton-oil liniment formerly referred to should be employed to keep up an eruption. In the meantime the general health should be attended to. Alkaline remedies are generally useful in the rheumatic tendency. Fifteen grains of the bicarbonate of potassa dissolved in a sufficiency of water should be taken three times a day; or the liquor potassæ to the extent of one or two tea-spoonfuls carefully diluted with a large quantity of water should be taken in the course of twenty-four hours. The other remedies required for internal use

in the rheumatic affections of the chest are enumerated under the general head of rhematism (page 69).

When pains of the chest are more severe, and a suspicion of a pleuritic tendency is present, local bleeding by leeches or cupping should be premised. When pleuritic or pneumonic inflammation is unequivocally present with constitutional disturbance, free venesection from the arm should be submitted to without the least repugnance. No harm in the commencement of almost any case can result from one venesection, and the relief it affords is great beyond description. The greatest enemies of blood-letting confess its efficacy as to present relief, while they deny its first effect in producing a cure. But even on their own showing, such a mode of treatment must be beneficial by the relief it affords and the time gained for the beneficial results of other treatment. It is the excess of blood-letting which is to be resisted. We must take care not to be deceived into the belief that successive blood-lettings are required by the mere reaction which follows a first venesection. But this is a matter to be decided rather by the medical profession than by the public. In former times blood-letting was often carried too far; at present the patient is apt to suffer from the reluctance to employ this remedy in opposition to the speculations of mere theorists.

The remedies which best second the effects of blood-letting, or supply its place when it has been deemed unadvisable, are tartarized antimony, and calomel and opium.

Tartarized antimony is most efficacious in inflammatory affections of the chest. Its effect to cause nausea and vomiting is not necessary for its beneficial influence; and it is very often found that half a grain may be administered every half-hour in inflammatory affections of the chest during a whole day without the least nausea. Calomel and opium are very efficacious after blood-letting; but such treatment requires the superintendence of an experienced practitioner. Blisters, that is, fly-blisters, should never be omitted in severe inflammations of the chest. The strictest abstinence as to food and wine is essential.

Tubercular Consumption.—The most important disease, after pneumonia, having its seat, according to received views, in the substance of the lung, is tubercular consumption. Tubercle is a diseased deposit from the blood; and this deposit may take place not only in the lungs, but in almost any texture of the living frame. When tubercle is deposited in many different parts of the body at the same time, the term General Tuberculosis is employed to signify the morbid state

into which the body has passed. The deposit of tubercle is common in the lungs between the ages of fifteen and thirty-five or forty. Much has been done to trace out the origin and progress of tubercular deposit, whether in the lungs or elsewhere. But the subject is too intricate to be yet ripe for being expressed in a popular form. The original seat of the morbid disposition is unquestionably the blood. It is a disease not dependent on mere inflammatory action, but on a bad habit of body. In technical language, it is a cachexia—a cachectic disease. In this respect an important change has been wrought on medical opinion within the last thirty years. Many circumstances tended, in former times, to force on medical inquirers the idea of tubercle being inflammatory in its origin. But among the obligations medicine is under to Laennec, the distinguished author of the method of auscultation by the stethoscope, is the decided lead which he took in upholding the cachectic nature of tubercle.

Tubercle is at first deposited in a liquid state. In this state it insinuates itself into the interstices of the pulmonary substance, and, passing through the lining membrane of the air-cells, fills their interior. The fluid matter becoming coagulated, passes into the state of a foreign body, though doubtless still endowed with a low vitality. After a time disintegration or slow death of the tubercle, marked by softening, takes place; and, along with this, ulceration of the adjacent parenchyma, or substance of the lung. Hence originate cavities sometimes of considerable size; and when such cavities affect the lung to any great extent, death is inevitable. If but a small portion of the lung is affected, while the other organs of the body remain sound, such changes may arise in the affected part as lead to a cessation of the disease. In short, there is the best reason to believe, contrary to the persuasion of former times, that under favourable, yet rare, circumstances, tubercular consumption, when it has not proceeded far, may have a favourable termination.

The indications of pulmonary consumption are dull sounds on percussion of the upper part of the chest, passing at last into peculiar kinds of resonance of the voice, as heard through the stethoscope, termed bronchophony and pectoriloquy; cough; purulent expectoration; emaciation; and hectic fever. Hectic fever attends many kinds of internal irritation; hence, popularly, the term consumption is apt to be applied much more extensively than in exact medicine. Hectic fever is a remittent form of fever—that is to say, it comes in paroxysms, each of which consists of a succession of chills, restless heat, and copious perspirations.

Tubercular consumption is unquestionably a hereditary disease. In the offspring of phthisical parents, when the predisposition is not very great, much undoubtedly may be done to ward off the disease—not, indeed, by remedies, but by such a mode of life as tends to render the constitution more robust. If the digestion be vigorous our efforts will probably be successful. If the stomach be fastidious and difficult to manage, there is little ground for hope. Persons of phthisical families should not be bred up to sedentary occupations, but rather to such as require being much in the open air, with this condition, however, that there should not be exposure to cold and wet.

The chief use of seeking a milder climate for the phthisical is, that they may be able to enjoy out of door exercise every day, without the risk attendant on such exposure in our variable climate. This risk may be considerably diminished by using a respirator, which, when the disease is actually present, may be worn by night as well as by day.

When tubercles have made much progress, it is cruel to send a consumptive patient abroad; and that which keeps up the credit of this pretence is an imperfect diagnosis. There are many forms of chronic bronchitis, and even diseases of other parts of the body, remote from the chest, attended with febrile intermittent symptoms, not unlike the hectic of phthisis, which are benefited by a residence in a milder climate; and such cases are every day set down as so many instances of consumption cured by a residence abroad.

Of late years the cod-liver oil has gained a great reputation in consumptive diseases; it belongs to the class of medicines by which the general health is improved when feeble, and therefore should not be omitted. The dose usually given is too large, and is liable to produce dyspepsia, or to excite the patient's disgust, so that he cannot continue its use. One teaspoonful twice or thrice a-day is, in most instances, sufficient. It may be taken floating on ginger-wine, or beaten up with milk; many prefer taking it without any addition, as it is perfectly free from unpleasant taste or smell when pure. To children it may be given by pouring it upon a piece of toasted bread, or some mashed potatoes; in this form, with the addition of a little salt, it forms a very palatable mixture. Some have attempted to substitute frictions with oils, instead of their internal use, on the ground that the persons employed in the woollen manufactories, who live in an atmosphere of oil, are supposed to be exempt from consumption. Such views at least deserve attention.

When the disease is actually in progress, the treatment is the

same, viz., the improvement by every possible means of the general health, and the alleviation of distressing symptoms, such as cough, night-sweats, and bowel complaint. Cough may be relieved by small doses of opiate medicines, as extract of henbane or of hemlock, in doses of from two to five grains; or twenty or thirty drops of compound tincture of camphor in a little mucilage, or almond emulsion. Night-sweats are best treated by acids, of which the dilute sulphuric acid is most commonly employed; fifteen to twenty drops may be given several times a-day, in a little water. Gallic acid has of late been much used for the same purpose, and is preferred by many physicians; it may be given in the form of pills, in doses of three grains, twice or three times a-day. The diarrhœa, which complicates some cases of consumption, is very exhausting to the strength, and should be checked as speedily as possible; the ordinary chalk mixture, with the addition of half a drachm of tincture of catechu and five drops of laudanum to each dose, will in many instances be sufficient; if this should fail, the oxide of bismuth, which has been very highly recommended, may be tried, in doses of eight or ten grains, several times daily. Cases which resist these remedies are, in all probability, accompanied by very extensive disease of the bowels, and are little amenable to treatment of any description.

Diseases of the Cavity of the Chest, or Pleura.—Of these pleurisy has been already spoken of. Empyema is a collection of purulent matter in the cavity of the pleura, that is, between the pulmonary pleura and the costal pleura; it either follows spontaneous pleurisy, or is the effect of injuries. It is sometimes drawn off by the surgical operation termed paracentisis or tapping of the thorax.

Hydrothorax is dropsy of the chest, and belongs to the general subject of dropsies.

Pneumothorax is air in the cavity of the chest, and, most commonly, mingled with fluid.

In the two last diseases, as well as in empyema, there is sometimes room for paracentisis.

The chief diseases of the walls of the chest and of the diaphragm have been already spoken of; one may be added—namely, hysteric pain of the side, often of long duration, and resisting every kind of treatment. It appears to be of a neuralgic character, and often finally disappears, when the patient acquires a more robust description of health.

CHAPTER XV.

DISEASES OF THE URINARY ORGANS.

In the following account of the diseases of the kidney, I shall especially bear in mind that I am addressing unprofessional readers; for while it is my duty throughout this work to keep this circumstance in view, it is doubly so when I enter upon a subject which is profound, and to a great extent enveloped in mystery. It is only of late years that even the principle on which the kidney acts has been clearly ascertained; and therefore it can excite no wonder if some of its diseases are matters of modern discovery, and if others still remain obscure.

Before, however, commencing this subject, I propose to consider in general terms the principle upon which the kidney acts; for, as will be readily evident, if that be clearly understood, we shall obtain a clue to the study of most of its diseases.

The kidney belongs to a class of organs known as the excretory organs, whose duty it is to remove from the system noxious or unnecessary material. The necessity for this class of organs will be evident at a glance; for occasionally substances directly hurtful are taken into the system, while non-nutritive, and an excessive supply of nutritive material is of daily occurrence. Moreover, as a change is continually proceeding in the structure of every part of the body, the old matter must be removed as the new matter is introduced. The noxious and non-nutritive substances are, for the most part, removed from the system by the bowels, as is also a part of the nutritive material when that is in excess; but when the matter has fairly entered the system—that is, the blood-vessels—it can no longer be got rid of in this manner. Thence arises the necessity for the existence of the excretory organs, that thus by the aid of the skin, lungs, liver, and kidneys, and a few lesser organs, the unnecessary nutritive material, and that derived from decaying tissues, may be removed. Since we are daily introducing into the body much matter which must be thrown out of it; and since the destruction of the tissues proceeds at every moment, it must be evident that the excretory organs are of vital importance, and that upon their efficient action the avoidance of local and general disease must mainly depend. Whenever, therefore, these organs, one or all, act insufficiently or excessively, we must expect disease.

The following is the mode in which the kidneys perform their functions:—The blood, loaded with the matters to be excreted, is brought to them, and very freely distributed, by means of myriads of vessels as large as a hair only, from which these organs select the matters referred to, and remove them, either in the forms in which they exist in the blood, or so change the forms that the elements assume a more convenient and portable shape. The term *excretion* properly refers to the latter action only.

The foregoing observations have been made in reference to the eliminating organs as a body, for as the principle evolved is common to them all, it was thought that it would not mystify the subject, but interest readers, to widen the range of observation as far as possible. Each organ has, however, certain special substances to evolve, although the material to be removed has much the same ultimate chemical constitution; and each one has a special anatomy, special diseases, and special re-actions by its diseases upon the system.

The urinary apparatus consists of the secreting organs, or kidneys, and a containing organ or bladder, two communicating tubes, or ureters, between these, and a canal leading externally from the bladder. Of these the kidney, and a canal by which the secretions would be discharged, are alone necessary; but since it would be highly inconvenient that the secretion should be passing away at every moment, the bladder is provided to contain a certain quantity, with power to retain the fluid until it is nearly filled. The necessary or essential part is met with in a very low class of animals, and even in the minute water insects which are too small to be examined by the unaided sight. In many of the lower animals there is no bladder, and there the secretion is poured at once into the bowel or its outlet; but in all the higher orders there are the parts above mentioned as existing in man.

In the construction of the kidney it is needful that provision should be made for three acts: 1st, the free distribution of the blood in very minute vessels, so that each particle of blood may be acted upon; 2ndly, the chemical or vital action, whereby the urinary substances may be separated and modified; and 3rdly, the removal of the secretion. Such a condition of the kidney is observed in man.

There are two kidneys in man, one on either side of the spinal column, in the upper part of the loins, and embedded in fat. Each one is four inches in length, two inches in breadth, and one inch in thickness. The left one is larger and thinner than the right, and is

also about a quarter of an ounce heavier. The average weight seems to be from four and a half to six ounces in the male, and somewhat less in the female; the proportion to the whole weight of the body is one to five hundred. The kidney in man is smooth, and without divisions upon its surface, while that of the calf, and other animals and insects, is divided into numerous external lobes. The whole organ has a clear red colour, indicating its great vascularity; but the part lying nearest to the surface (hence called the cortical part) has the deepest hue. This external or cortical portion is that in which the urine is formed; while the part placed more internally, and terminating in a number of pointed portions or nipples, is chiefly that which conveys the urine so secreted to a membranous cavity called the pelvis, from which it is ultimately forwarded to the bladder. It is probable that the chemical action is almost solely confined to the cortical portion, and there we must look for the proper structure of the kidney. This structure consists of a transparent membrane, formed into a tube nearly as small as a hair, having externally a net-work of blood-vessels to supply the blood, and internally a layer of cells called epithelium, to secrete the urine from the blood. One end of this tube is expanded into a kind of globe, named after a celebrated anatomist Malpighi, and within or upon this is a net-work of blood-vessels. The more central portion, called the medullary portion, also consists of tubes, but they are straight, lying in bundles side by side, and terminate at the end or apex of the nipple. This is also known as the tubular structure, and as it also possesses a layer of cells, although fewer than those observed in the cortical portion, it is probable that it exercises some influence over the secreted fluid. As the last portion, or pelvis, is merely a kind of bag, with an open neck to collect the urine, and a tube to convey it away, I need not further refer to it.

It will be perceived from this short description of the minute structure of the kidney, that the epithelial cells are the most important organs, since the essential function of the kidney is confided to them. These little bodies, too small to be seen by the naked eye, do not live for a long period, but after a time put on a rough and darker coloured appearance, and are thrown off by the membrane to which they were attached. The constant renewal of these cells is therefore of the utmost moment to the kidney; for without them, not only would urine, properly so called, not be produced, but the thin parts of the blood would pass through the kidney unchanged, and the patient die from exhaustion. When disease of the structure

of the kidney occurs it is chiefly in reference to these cells, on the principle that disease is most likely to attack the most active organs.

I have now shown that, in a state of health, there are certain matters in the blood which must be removed by the kidneys, and that the kidneys have an apparatus fitted for their removal, their chemical reconstruction, and the ejection of them from the system. I have also inferred that if this eliminating action be carried on in excess, or not sufficiently carried on, we may from either cause alone expect a disordered or unnatural secretion, and some diseased or disordered condition of the general system as the result of it. I may now further add, that if the state of the blood be unnatural or diseased, so probably will be the secreted fluid, as indeed it will be if the secreting organ itself, or any part of it, more particularly the epithelial cells, be diseased. Thus we arrive at the conclusion that the state of the urine may be a valuable guide in the investigation of disease; and indeed we know that in all ages a high degree of importance has been popularly ascribed to any change observable in that fluid. Let us now, as a standard of comparison, first consider

Healthy Urine, which possesses the following characters:—It is clear when passed and until decomposition begins, and has an acid reaction on the emersion of litmus paper; the colour is that of straw, but it varies somewhat in different individuals—with the period of the day, being darker in the morning—and with the quantity of fluid taken into the stomach, being darker in proportion to the small quantity of fluid. Its odour is peculiar; but when fresh it has neither a sweet nor a pungent odour. The specific quantity, or its weight when contrasted with an equal quantity of water, is from 12 to 25 per 1000 more than water, or in other words, is as 1012 or 1025 to 1000. When boiled it still remains clear, and the addition of a strong acid, with or without heat, causes it only to become a little browner. There are no crystals or any deposit, except a very little light-floating mucus at the bottom of the vessel.

The urine which is passed on rising in the morning is purer than that passed later in the day, because it is drawn from the blood products more especially, and is less influenced by the introduction of substances with the food. This kind of urine is called *urina sanguinis*, while that secreted after taking food is termed *urina cibi*.

The influence of food over the physical qualities of the urine has been well developed by Dr. B. Jones. He states that the urine is most acid when the contents of the stomach possess the greatest acidity, and *vice versâ*. The urine passed the latest after taking food is

generally the most acid; that passed during digestion is three or four times less acid, and sometimes even alkaline. Immediately before each meal the urine always shows the greatest acidity; that passed in two or three hours afterwards shows the least. The decrease is greatest three hours after breakfast, and five or six hours after dinner, when it reaches the minimum. In the absence of food the acidity remains nearly the same for twelve hours, but falls directly after taking food. With animal diet only, the diminution of acidity after food is very rapid, and more permanent than after mixed diet, the urine often becoming alkaline. With vegetable food, excluding sub-acid fruits, the decrease of acidity after food is much less marked, and the increase of acidity before food much more evident.

The chemical analysis of the urine shows it to be the most complex fluid known. Thus it contains urea, uric acid, creatine, creatinum derived from the dying tissues, hippuric and lactic acids, sulphates, phosphates, and chlorides of sodium, with mucus and other organic matters.

Disordered Urine.—The most frequent change from a healthy standard is a muddiness which occurs after urine, which was clear when passed, has been set aside for some minutes. If a small quantity be poured into a bottle, a number of floating, thready, or dusty brown particles will be observed; but if the bottle be held near to the fire the whole will disappear, and the urine be again clear. The substance deposited is the *lithate* or *urate of ammonia*, and the appearance of it is due to the cooling of the urine. It results from exposure to cold, from slight and ordinary catarrh, and from indigestion. It is of no consequence, except as indicating these general derangements. At other times this turbid urine puts on a pink hue, and occasionally so much so as to be very remarkable. This is owing to an excess of the colouring matter of the urine united to ammonia, and called the *purpurate of ammonia*. This is also met with in fevers and in indigestion, but in a form somewhat more aggravated than that already referred to. There are no crystals observed in either of the above cases, and the urine is acid.

The *lithic* or *uric acid* constitutes the red sand or gravel with which every one is familiar; it being frequently observed as small red grains at the bottom of the vessel. It feels gritty and sandy to the touch, and is not observed in urine immediately after it is passed, or so long as that fluid continues warm; and therefore some hours should be allowed to elapse before an examination is made. It may be found in urine which is perfectly clear, or it may be developed in a cloud of

mucus. If the quantity be small, it can be observed only when the urine is placed in a bottle, when it may be seen adhering to the sides, or lying at the bottom. This state of urine is observed in many conditions of the system. It is very frequent in persons who live freely and take much animal food, or wines, spirits, or ale; and when in excess, it is accompanied by an irritable condition of the kidney, with pain in the back, frequent desire to pass water, thirst, and some degree of heat and anxiety, and then patients are said to have an attack of gravel. Here, also, there is indigestion; and in addition to the appropriate treatment, it will be proper to employ the hip-bath twice a-day, to avoid all stimulants, and especially such as nitre, under the idea of forcing the urine, and to take tea-spoonful doses of Epsom or Glauber salts, with half a tea-spoonful of carbonate of soda, or a less quantity of potass, twice or thrice a-day. Diluents, such as barley-water and linseed-tea, are to be freely drank; vegetable acids may also be used, and perfect rest enjoined.

Another common urinary deposit is the oxalate of lime, crystals of which are found so frequently, whether alone or combined, in so many states of the system, that they cannot be regarded as peculiar to any, or indicative of disease. Neither these crystals, nor the oxalic acid of which they are partly formed, are found naturally in urine; and hence it is a matter of interest to know how they have been produced. In the first place, they may have been taken into the stomach with food, as rhubarb and sorrel, and similar plants, which contain these crystals in great abundance. They are generally found after drinking champagne, and they may be produced by a chemical change in the sugar which we eat; and this is probably a frequent mode of production.

Sugar, which is nearly allied to oxalate of lime, is not a component part of natural urine, but is met with in certain diseased states of the system. There are two kinds of sugar in common use, known as grape-sugar and cane-sugar. The latter is the ordinary sugar of commerce; while the former is alone met with in the urine. This is an important inquiry; since the presence of sugar in the urine is indicative of great waste of nutritive material, and would certainly lead to decay of the system. The detection of it is not difficult. If a quantity of such urine be evaporated to an extract, and then digested in hot alcohol, white granular masses of sugar will be observed on the gradual evaporation of the alcohol.

Another simple test is, to boil for a minute or two a little of the urine with half its bulk of solution of potass, when the

colourless grape-sugar becomes converted into orange-brown molasses.

If such urine be kept exposed to the air at a moderately warm temperature, it will put on the vinous or acetous fermentation, and the vegetable cells known as torulæ diabetica will appear in it.

Another deposit very frequently met with is that of the phosphates of lime, or of ammonia and magnesia. These are the largest crystals produced in urine; and when present in any quantity, may be seen adhering to the sides or resting at the bottom of the containing vessel. Their existence, moreover, does not indicate disease, unless discovered very speedily after the emission of the urine; for if healthy urine be set aside until decomposition has proceeded for some time, they may usually be found. This deposit is of general interest, from the fact that while uric acid abounds to the exclusion, or nearly so, of the phosphates in early life, and so long as the system retains its health and vigour; the phosphates abound, to the partial exclusion of the urates, in the urine of very old persons, and in others who are breaking up from disease or premature decay of the vital powers. Whenever, therefore, this deposit is at all habitual, it is of the utmost moment to attend to its indications. In such instances, as indeed in nearly every case, the urine will be only very slightly acid, or more commonly alkaline, immediately it is passed, and will be prone to very early decomposition. A pungent odour very frequently accompanies it; while a frequent desire to pass urine, from inability to retain it, is the first noticeable symptom. It is customary to find a manifest turbidity of the urine immediately it is passed, and which cannot be removed by heat.

Besides occurring more or less as age advances, it is also commonly observed in those who live chiefly on vegetable diet, or who from poverty or other causes do not take meat and stimulating drinks. In such instances, moreover, the urine is very prone to decomposition.

When a child who has been accustomed to retain its urine suddenly acquires the habit of wetting the bed without any evident cause, it will generally be found that the urine is alkaline, or insufficiently acid; and should it have continued so for some time, the phosphates will generally be present. This state is sometimes associated with disease of the mucous membrane of the bladder, or other urinary organs, and then may be purely a local disease; but as a rule, the frequent recurrence of this affection should be ascribed to general causes, and treated accordingly.

When it arises from impending decay, it is not enough to render

the urine acid by the administration of nitric or hydrochloric acids; for then the state of system would remain as before, and the disease would return. Acids are proper, but should only be a part of one general plan of treatment; viz., to sustain the system. Change of air and scene are of no little importance. When it occurs as the result of some other disease, it must be treated as a part of that disease; and when it occurs in children, as above mentioned, a liberal administration of acids, with bitter tonics, exercise in the open air, and animal food, will ultimately remove it. Should the patient be living in a low or damp situation, he should be removed into a high and dry one.

Many abnormal substances are occasionally found in the urine, as mucus, pus, blood, bile, and fat; but these are matters too intricate for popular illustration, and I now proceed to detail some of the diseases to which the kidney is liable, and their effects upon the urine.

Excessive action of the kidney is met with in hysteria, in which the urine is pale and almost odourless as water, and in enormous quantity. This results from the state of extreme excitability. A similar state of things is temporarily induced by fright, drinking simple fluids in excess, or from drinking stimulating fluids, and more particularly gin, from the juniper which it contains. As a whole, there is a greater action of the kidney in winter than in summer, so as to obviate the ill effects which might follow the diminution of perspiration. In the instances referred to the chief ingredient in excess is the water; but excessive action of the kidney may be indicated by the production of an unusual quantity of more important elements, as uric acid. In the latter case, however, it is probably not the excessive action of the kidney which increases the quantity of the uric acid, but the presence of a large quantity of the acid in the blood inducing the former. This may be highly important; for if the excess of uric acid be not the result of excess of food, it depends upon the excessive destruction of the tissues, a circumstance which would ultimately endanger the life of the person.

The phosphates have been found in excess in insane persons, and have been held to indicate an unusual degree of wear and tear of the brain. When excessive action is only of short duration, and of unfrequent occurrence, no ill effects to the kidney are induced; but if it be constantly continued, it will end in throwing off the epithelial cells, and the destruction of the kidney by organic disease.

Diabetes.—Another condition accompanying an excessive action of

the kidney is known as diabetes. Its essential peculiarity is that the urine contains so large a quantity of sugar as to be sweet to the taste, and smelling of sweet hay or of an apple room, and forming a cake of sugar on evaporation, from which crystals may be obtained. The other elements of the urine appear on the whole to be healthy, except the water, and this is so abundant, that while the total quantity in health is about two pints, in this disease it is ordinarily seven to fifteen per day, and has been known to reach the enormous extent of eighty, and even two hundred pints in one day. To the tests for sugar I have already given may be added the taste and odour of that substance, and the fact that the specific gravity of the urine is very high when sugar is present. In colour the urine is a pale green, and the fluid is transparent; yet if a drop fall upon the trowsers or any other article, it will, after evaporation, leave a powdery appearance of sugar. The symptoms, besides those of the urine now given, are very characteristic. Thus, as the fluid is drawn from the body by the kidney to so great an extent, little can exist elsewhere, and the skin is dry and harsh, and never perspires, while the bowels are costive from the like absence of fluid. The craving for fluid is also very remarkable, and is accompanied by a dry and red state of the tongue. As the sugar is composed of the elements of the food, the system is badly nourished, and nervous sinking and bodily wasting ensue, although the quantity of food taken is oftentimes very great. It is clear that in the struggle now proceeding, the production of the sugar in the urine will ultimately starve the patient. The questions of treatment are simply—how can we support the system, and yet not supply those elements from which the sugar is produced? It is manifestly a disease of the digestive and assimilative functions. Now it is found that vegetable food, and more particularly the most nutritious of this kind of food, as bread, grains of all kinds, including pease and beans, and potatoes, contain the most sugar, or the most starch, a substance which is readily converted into sugar. Animal food, on the other hand, does not supply this kind of food. Thus, the plan is to restrict the patient absolutely to the various kinds of animal food, as meat, milk, and eggs, and these cooked and varied in a thousand ways. When he rebels and will take a little vegetables, it should be of the green and fresh kinds, because they contain but little starch and sugar. He should be gradually limited to a small quantity of water to drink. The bowels should be regulated, but not by salts, and the functions of the skin excited by hot air baths. Opium, in full doses, and regularly administered, relieves the

nervous anxiety, and quiets the kidney, and therefore is most valuable. Creosote has also been strongly recommended, and steel also, to give tone to the system. Fresh air, exercise, change of scene, and amusement, are particularly beneficial, but care must be taken to avoid exposure to cold.

The disease is usually one of long duration, and when it ends fatally it is by inducing disease of some other organ. It must always be regarded as one of great gravity.

DEFECTIVE ACTION of the kidneys is usually far more serious in its immediate consequences. Sometimes the secretion altogether ceases, and then the patient dies in a few days. In these cases, the elements of the blood which ought to have been discharged are retained; and being retained, they poison the blood, and through that fluid injuriously affect every part of the body. The chief element of mischief is the urea which may then be detected in the blood and perspiration, and gives an odour of urine to both fluids. The patient usually dies from disease of the brain or of the lungs.

It is important to distinguish this disease from retention of urine within the bladder; for, if the latter be discovered in time, the introduction of the catheter would remove it. The distinction is not usually difficult, since in the latter case there is a swelling and great tenderness at the lowest part of the bowels, and usually a frequent desire to pass urine. Both conditions, however, agree in this, that medical advice ought at once to be sought. These states of excessive or defective action may exist, so far as is known, without any inflammatory condition of the kidney, and are not at first usually accompanied by pain in the region of the organ.

GRAVEL, as it is usually understood, is accompanied by ill-defined, or by sharp pain over the region of one or both kidneys, and there may or may not be tenderness on pressure. There is also much pain on every attempt to sit upright or to turn in bed. At first this is the only symptom; but soon afterwards there is some difficulty in passing urine; thirst, and heat of skin, and sleepiness are induced, and if relief be not obtained the pain will amount to agony. It is probable that even at this point there is some irritation of the kidney; but the frequent use of hot baths, the administration of large doses of opium and of alkalies, as potass, with or without aperients, as may be requisite, will suffice to remove the attack. The gravel in this case is usually of the red or uric acid variety. Sometimes a white gravel is met with, which consists of the phosphates, and is usually mixed up with mucus, more or less ropy; but in this case the suffering is

by no means so great. The term gravel should be restricted to the presence of the former kind of deposit.

Occasionally a calculus or stone is formed within the kidney, and lodges there or in the ureter, causing very great distress. In this case, which is one of great danger, opium in one or two grains, doses every three hours, or chloroform, may be administered. The hot bath should also be used, and perfect quietude enjoined. In a relaxed state of the parts, the stone may pass into the bladder; but when it cannot pass, the case will probably end in death, from inflammation and consequent destruction of the kidney or ureter.

INFLAMMATION of the kidney in its acute form is a rare disease, except as the result of injury or a poisoned condition of the blood. There are several conditions of the system in which inflammation of the kidney, more or less acute, is apt to occur, such as scarlet-fever; but in all these cases the blood has been previously poisoned by the disease, and acts upon the kidney.

There is local pain, usually of a severe lancinating character, accompanied by great tenderness on pressure, either by the hand or the weight of the body as it lays upon the bed, with inability to turn, on account of the great suffering induced.

If only one kidney be affected, it is probable that the other one, by taking an increased action, will suffice for a time to get rid of the urinary elements from the blood; but should the disease continue for some time, or should both kidneys be diseased, the blood becomes poisoned, and then follows diseased action in the brain, lungs, and other organs. Inflammation of the kidney may terminate in abscess —PYELITIS—marked by increased constitutional disturbance, shiverings, and the appearance of pus in the urine. This is a very serious matter. The abscess may break into the cavity of the abdomen and cause death; or be discharged into the bowels, with the same fatal but a more protracted result. Cases exist in which an abscess has opened externally, and life been prolonged for a considerable period.

There are certain states of the kidney both of enlargement and contraction, of softening and of hardening, which no doubt have their origin in inflammation of the kidney, and known as

BRIGHT'S DISEASE, in which the tubes, or many of them, are emptied of the proper epithelial cells, so that the serum of the blood passes through unchanged. The condition of the urine is of essential value in the investigation of this not-yet-known disease.

The symptoms are very varied. The most prominent being that the urine coagulates—that is, albumen becomes visible in it upon the appli-

cation of heat; but this condition is entirely beyond domestic management, while, under the best medical care, the probability of recovery is exceedingly small.

Inflammation of the Bladder is characterized by pain between the legs and above the pubes, especially upon pressure. There is also swelling and tension in the lower part of the abdomen, frequent desire to make water, which is either passed in small quantities and with much straining, or not at all. General uneasiness in the abdomen, nausea, and vomiting are not unfrequent. The pulse is feeble and irregular; and if relief is not obtained, hiccough, delirium, and convulsion usher in a fatal result. This is a formidable disease, requiring energetic treatment, and great practical skill to overcome. General bleeding and the application of leeches over the region of the bladder and between the legs are very necessary; warm poultices give much relief, as also the warm bath, and the exhibition of opiates. We must also induce perspiration by the use of saline draughts, or antimonial wine, if the stomach is not too irritable to bear it, when Dover's powder in twelve grain doses may be given. Calomel in sufficient doses to make an impression upon the system is often necessary; two grains with one of opium every four or six hours. When the bladder is distended, the water must be drawn off by the catheter.

The diet must be strictly farinaceous; but when the inflammation terminates in suppuration, and a discharge of purulent matter indicates what has taken place, the strength must be supported, and if the debility is great ale or porter allowed. Inflammation of the bladder always requires the urgent care of a professional man.

Chronic Inflammation of the Bladder, or Vesical Catarrh, is not an uncommon complaint, especially in old persons. It consists in a discharge of mucus with the urine, with some degree of irritation of the bladder. It may be occasioned by cold, gout, rheumatism, scrofula, intemperance, and the abuse of highly seasoned food. It is often the result of acute affections of the kidneys and the urethra. It is a very troublesome complaint, and sometimes of very long continuance. It is best treated by anodynes to soothe the local irritation; demulcent drinks, as barley-water with gum dissolved in it; and mild laxatives. When of long standing turpentine in doses of twenty to thirty drops three or four times a-day is highly beneficial. Tar-water has been recommended as a drink; as also infusions of the uva ursi and pareira brava. Tonics, as quinine, are often necessary; and when complicated with gout, colchicum may successfully be

employed. If the urine itself is at fault, and its irritating properties give rise to the affection, the phosphates being present (see page 149), the mineral acids must be exhibited. The bladder itself may advantageously be injected with emollient fluids, as the infusions of marsh mallow, lint seed, or barley. An astringent lotion may in the same way be locally applied. The diet must be mild but nutritious; consisting of milk and farinaceous food, with boiled meats rather than roasted. Flannel must be worn next the skin to guard against the vicissitudes of climate. Chalybeate mineral waters are often useful.

STRANGURY is a symptom of irritation of the urinary passages, and is chiefly characterized by a frequent desire to make water, of which very little passes, and that accompanied with much pain. It sometimes follows the application of a blister to any part of the body; but is easily relieved by doses of camphor-water, with a few drops of laudanum, mucilaginous drinks, and warm fermentations.

INCONTINENCE OF URINE, or want of power to control its discharge, is a most painful affection. It may depend upon nervous influences, and upon irritation of the bladder itself, or a disordered state of the urine. In the first case we must strengthen the system, improve the general health, and give tone to the part. Steel wine is very useful in doses of half a drachm three times a-day. Cantharides have been very successfully administered; and sea-bathing is highly beneficial. If there is disease of the urinary organs, of which incontinence is a frequent symptom, it must be treated accordingly. Children are sometimes subject to incontinence of urine during the night, depending upon an unusual and temporary susceptibility of the nerves of the organ to the stimulus of distention. It is commonly thought that punishment is the best cure in these cases; but unless the principle upon which punishment operates be kept in view, the unfortunate child may be, and indeed often is, subjected to unavailing cruelty. Punishment can only operate by awakening attention to the first approaches of the sensation of the distention which enforces instant obedience; and which, when it has arisen, no effort of the will, even under the dread of punishment, is adequate to resist. The best mode of treatment is to allow no drink during the latter part of the day, to insist upon the bladder being evacuated before going to bed, and awaking the child during the night for the same purpose. Tonics, especially steel wine, and cold bathing are useful.

SUPPRESSION OF URINE, if not overcome, soon proves fatal. It depends upon a diseased state of the kidneys, or from a mechanical impediment, as stones in the ureters (see page 153), to the flow of

urine from the kidney into the bladder. The most prominent sign of suppression is the absence of the secretion; there is also a sense of weariness in the loins, with nausea, vomiting, drowsiness, and general dropsical swelling. The patient about the fourth day becomes comatose, and death soon takes place. In some cases pain in the loins may not occur, and the patient dies comatose in a few hours. When a mechanical cause induces suppression the pain is excruciating; after a time this subsides, and the patient dies.

If the affection depends upon organic disease of the kidney, it is only one of a train of symptoms which must be treated accordingly. But this is not always the case, and then blood-letting, opiates in full doses, the warm bath, and purgatives must be employed. When coma sets in death is inevitable.

Retention of Urine must be distinguished from suppression; and this is easily done by the empty state of the bladder, as detected by pressure with the hand over the pubes, and the use of the catheter.

But I have said enough upon diseases of the urinary organs to show their very serious nature, and to afford some notions of the principles upon which they are to be treated. In conclusion let me add, that nearly all demand great practical skill, not only in bringing them to a successful termination, but even to detect their varieties and apply the appropriate remedies. None but a medical man should venture to interfere with them.

CHAPTER XVI.

DISEASES OF THE UTERINE SYSTEM.

The uterine system, in the females of the human race, presents a great complexity of organization, and a corresponding multiplicity of actions subservient to the important purposes of originating the germ of the new individual before conception; and after conception of sustaining and nourishing the same up to that point of development at which it is destined to pass into the outer world. Among the actions concerned in preparing the uterine system for the great work of reproduction, none is more remarkable than the secretion to which the females of the human race are subject at nearly lunar periods during the entire continuance of their reproductive life. This singular peculiarity in their constitution gives origin to several

diseases of a like peculiarity—that is, to diseases unknown among the females of other animals—unknown in the males of the human race. The diseases falling under this head are chlorosis, or the green sickness, at the period when this secretion should first appear; amenorrhœa, or suppression of the secretion after it has already taken place; dysmenorrhœa, or painful menstruation; menorrhagia, or profuse discharge of that secretion; leucorrhœa, or colourless secretion from the same organs. Of these in order.

The commencement of this secretion coincides with the age of puberty, which appears in this country most commonly to arrive in the fifteenth year. In the tables published on this subject, the appearance of the secretion is represented as taking place in the greatest number during the fifteenth year; next to that in the fourteenth year; then in the sixteenth; then in the seventeenth; then in the thirteenth. In rare cases, it occurs as early as the eleventh year, even in this country. The entire period of reproductive life in this climate hardly exceeds thirty years.

Several changes are produced, besides the occurrence of this secretion, on the female frame at the time of puberty; these consist chiefly in the enlargement of the several organs concerned in reproduction, as indicated by the greater development of the mammary glands. When this last change takes place decidedly, after the completion of the fourteenth year, and signs of the girlish character giving place to the womanly at the same time appear, it seldom happens that the periodical uterine secretion is not quickly established in a complete manner within a short time. In a few, its commencement is not marked by any attendant indisposition. In most, however, at one or two periods before the secretion actually begins, there are uneasy feelings, such as disorder of the stomach and bowels, pains of the back and around the haunches, faintness, flatulent distentions, and the like. Some degree of feverishness may even arise. The secretion seldom assumes its proper aspect at the very first; and it often happens that several periods have occurred with such symptoms as are noted above, the secretion in the meantime being nearly colourless, before the proper secretion becomes established. A dark circle around the eyes usually accompanies the secretion, while the features for the most part have their natural expression somewhat obscured. When this important change becomes established with no greater difficulty than that now described, it is not considered that any disease has arisen. When, on the contrary, ill health arises, marked by peculiar characters, while the secretion either does not commence at all or

only in an imperfect manner, the disease now formed is termed by physicians Chlorosis, or, popularly, the Green Sickness.

Chlorosis, or Green Sickness.—The symptoms characterizing chlorosis are disorder of the stomach, sometimes accompanied with an inclination to eat substances unfit for food, as chalk, ashes, and the like; sallowness of the surface, or even discoloration; the veins not prominent but sunk; tendency to swellings of the surface of the body; prostration of strength; palpitations; the non-appearance of the uterine secretion at the proper periods.

A question has arisen among medical authorities whether chlorosis, as characterized by the signs just enumerated, should be regarded as a distinct disease, or merely as a train of disordered actions symptomatic of the non-appearance of the uterine secretion at the proper period of life. The name given to defect of this secretion under all its forms is Amenorrhœa, and two species of this disease are universally recognised—namely, retention of the secretion, that is, its non-appearance at the usual age; and suppression of the secretion, that is, its disappearance after having been established in the constitution. Those who regard chlorosis as solely symptomatic of the first of these species of amenorrhœa, include what they have to say of chlorosis under the head of that species, namely, the amenorrhœa of retention, refusing to chlorosis altogether a place among diseases. According to the opposite view, chlorosis is a depraved state of health, one of the concomitants or effects of which is retention of the uterine secretion at the epoch when it should develope itself. This question may seem at first sight to be a purely speculative difference of opinion, having no bearing on the great practical purpose of medicine, namely, the cure of disease. But the case really stands otherwise—for it sometimes happens that this uterine secretion fails to appear at the accustomed age, and yet no such symptoms as those included under chlorosis arise; and it is undeniable that the cure of chlorosis does not so much depend on the use of remedies known to promote directly the secretion in question, as on those which promote the general health, and thereby enable the uterine system to develope itself near the appointed time, in obedience to the law of a healthy female frame.

In the few words to which my account of chlorosis must be confined, that state of the female frame is regarded as a distinct disease, one of the concomitants or effects of which is a retention of the proper uterine secretion.

The prominent character in chlorosis is the defect of energy in the performance of the several functions. There is a deficiency

in the proper vigour of the circulation of the blood, as indicated by the paleness and discoloration of the surface, by the palpitations, by the want of fullness in the veins, and by the tendency to dropsical accumulations in the cellular tissue. The tendency to loss of breath under slight exertion is another indication of the feebleness of the circulation; while it shows at the same a failure in the forces by which respiration is carried on. The nervous system participates in the general feebleness, as is indicated by the disposition to nervous and hysteric affections of various kinds. The pains of the head, back, loins, and haunches are of that kind which attends a languid circulation of the blood, in the central parts of the nervous system. The dyspeptic symptoms, that is, disorders of the stomach and bowels, point to the deficiency and depraved state of the secretions concerned in the several functions of the abdominal organs; while complete prostration of the bodily strength could hardly fail to be the result of so much internal disorder, affecting the due nutrition of the muscular system. The blood is found to have lost its due chemical composition, being deficient in the important element of iron; it is more watery, and the red globules less numerous.

Thus chlorosis is a cachetic state of the female frame—that is, one of the forms of what is termed a bad habit of body. It is closely allied to anæmia, or the morbid state in which the red blood has become deficient.

The causes which favour the origin of chlorosis in the female frame entirely bear out the view which has just been taken of the character of the disease. An originally feeble frame of body is undoubtedly sufficient to subject the individual at the age in question to the various symptoms constituting this disease. The changes destined to take place at that age demand an extraordinary effort on the part of the living forces. To sustain such an effort a considerable increase in the nutrition of the whole frame must be necessary. If the living forces under the actual circumstances of the constitution be inadequate to carry out these changes, with the ordinary support of an extended nutrition, then the unavailing efforts which take place still further debilitate these vital forces, and render them inefficient even for the uses to which they had before sufficed, and chlorosis arises.

The causes which, independently of any original feebleness of constitution, produce chlorosis, operate on the same great principle. These causes are such as enfeeble the frame as the period of puberty approaches; namely, sedentary occupations with late hours in the confined atmosphere of ill-ventilated houses, ware-rooms, and

factories; hot rooms and an over delicate system of training; excessive application to study without the relaxation and amusements congenial to the age of youth.

When nothing has occurred beyond the slight disturbance of health above described as commonly ushering in the appearance of the uterine discharge, little treatment is required farther than some attention to the stomach and bowels, the warm bath, or the warm hip-bath, and a little care in the regimen adopted. A tea-spoonful of calcined magnesia, or fifteen grains of bicarbonate of soda, with some aromatic water, such as cinnamon or pimento water, repeated as occasion requires, will usually correct the stomach disorder. When aperient medicine is necessary, some of the preparations of aloes answer well, such as one or two ounces of the decoction of aloes, or a similar quantity of the wine of aloes. If the bowels be habitually confined, even half an ounce of the wine of aloes, taken daily during a short course, will often restore their tone and otherwise benefit the health. The warm bath and the warm hip-bath are not for constant use, but only for a few days before the time, when the effort to produce the secretion is expected. As to regimen, the case supposed hardly requires any special care in respect to mere diet; but it does require that all unusual exertions, whether of mind or body, should be suspended; and in particular, that late hours and causes of anxiety should be carefully avoided.

If the symptoms amount to what was represented above as indicating the actual state of chlorosis, the patient should be placed without delay under the care of a judicious medical man. It is not a disease to be treated by domestic remedies, except in its very slightest forms; but the great objection to the treatment of a severe case being undertaken by a mother is that the fugitive symptoms of chlorosis often conceal some very serious disease, nay, too often a fatal disease. It is quite true that the medical man, called in however early, may not find professional skill of any avail to prevent the fatal termination of the disease, which may lurk concealed under the mask of chlorosis; but surely he has taken from a mother, in such a case, a fearful responsibility, if he has given to her daughter what it was not in her own power to afford,—all the chance of preservation which the dispensations of Providence permit the art of medicine to supply.

The principal remedy in chlorosis is steel in its several forms. The tincture of the muriate of iron, or, as it is now termed, of the sesquichloride of iron, is a good form; it may be begun in

doses of ten or fifteen drops with a little water three times a-day, and gradually increased to such an extent as the stomach will easily bear. There is another tincture of steel, namely, the tincture of the ammonio-chloride of iron, formerly termed the tincture of the flowers of Mars, which has had a great reputation in chlorosis and amenorrhœa in general. It may be given in much the same doses as the tincture of the sesquichloride. The preparation of iron contained in the tincture of the flowers of Mars is also given in the form of powder to the extent of from three to ten grains several times a-day. The compound mixture of iron is another excellent medicine in chlorosis; it is given in the dose of one or two ounces several times a-day. The compound pills of iron have a similar composition and use. Both these last preparations contain myrrh, which has the reputation of being itself a good remedy in chlorosis. Iron may also be given combined with iodine, and quinine, the essential chemical principle of Peruvian bark. Iodine is itself an excellent remedy in chlorosis, either alone in the form of tincture, or in its combination with potassium, named the iodide of potassium, the same medicine which is termed the hydriodate of potassa. The dose of the tincture of iodine, simple or compound, is from five to fifteen drops three times a-day; the compound tincture containing both iodine and iodide of potassium. The dose of the iodide of potassium by itself is from two to five grains, several times a-day. The preparation in which iodine and iron are combined is the iodide of iron; it is given in the dose of from one to five grains several times a-day. A syrup of iodide of iron is to be met with in the shops; the dose of which is from fifteen drops to a tea-spoonful three times a-day. Quinine, a most powerful tonic, is combined with iron, in the preparation termed the citrate of iron and quinine, the dose of which is from three to five grains several times a-day.

The aperients used in chlorosis should be of the warm character, like the decoction and wine of aloes already spoken of.

A simple nutritious diet, sometimes wine or good malt liquor, gentle exercise in fresh air, amusements congenial to the age, are all points of the utmost importance in the management of this disease.

Amenorrhœa.—When no chlorotic symptoms attend the non-appearance of the uterine secretion at the accustomed age, the usual rule laid down is to regard the patient as in health, and to discourage all attempts at treatment. If, however, any other kind of ill health arises at this period, the patient must be committed to the charge of a skillful medical man. For although, commonly, previous ill

health be the cause of the retention of the uterine secretion at puberty, yet there are doubtless cases in which special causes operate to that effect and which require a particular consideration; one of these is the occurrence of a mechanical obstacle to the exit of the fluid after the secretion has taken place.

What is termed suppression of the uterine secretion (*amenorrhœa suppressionis*) still remains to be noticed. When a suppression of the ordinary uterine secretion has occurred at any other period of reproductive life than the age of puberty, the first thing to be considered is how the health of the patient stands at the time in other respects. Such a suppression may be accompanied by a plethoric state, that is, an over-fullness of blood in the whole system; or it may be attended by a feeble state of health, agreeing even in a few respects with the chlorotic condition as before described. In either case, what are termed vicarious hemorrhages—that is, discharges of blood from various organs of the body—may take place, corresponding in their periods to the times at which the secretion should return. In either case, also, the various symptoms grouped under the head of hysteria may arise and complicate the disorder of health.

When there are distinct indications of the plethoric state, along with suppression of the uterine secretion, the treatment must be conducted on a plan considerably different from that to be adopted when the state of health is feeble.

The plethoric state of the system is marked by a fullness of the veins, floridness of the countenance, the several parts of the body being prominent and well developed, the secretion in general copious, the pulse firm, all the actions performed with manifest energy. These are the signs of the plethora of early life in a vigorous frame. There is another form of plethora belonging to constitutions of less vigour, and for the most part at a less early period of life. It is marked by fullness of the veins, a roundness and want of prominence in the figure of the frame, owing to the more copious deposition of fat, a less abundance in the secretions, a fullness but want of firmness in the pulse, all the actions of the body being performed with less vigour. When amenorrhœa occurs in a previously plethoric habit, it is easy to understand that the suppression of an accustomed drain from the frame will generally aggravate that morbid plethoric state. The safety of the patient then from other diseases, such as plethora gives a disposition to, requires that means should be taken to diminish this condition. Where there is immediate danger from the plethoric state, general blood-letting is the most ready and effectual remedy; and

this remedy is much more likely to be called for and to be practised with safety in the first described form of plethora than in the second. In neither, however, should it be resorted to unless the case be urgent, nor without the sanction of a judicious practitioner. No mere verbal rules can suffice to teach a person when to take blood, and when to abstain from blood-letting. To determine such a question skill is requisite. Laxatives contribute much to the reduction of the plethoric state. The saline purgatives, such as the sulphate of magnesia, that is, Epsom salts; the bitartrate of potass, that is, cream of tartar; the potassio-tartrate of soda, that is, the Rochelle salts, are the most appropriate, when they do not create much flatulent disturbance. The aloetic preparations, as having the effect of promoting the uterine secretion, should be resorted to at least in alternation with the saline purgatives. Diuretic drinks are useful in the plethoric state, such as cream of tartar water, sweetened with sugar, commonly called imperial, tamarind water, lemonade, soda, potass or magnesia water. The diet should be restricted. All alcoholic drinks are to be prohibited, from table-beer to porter, wine, and spirits. When no immediate danger is threatened, moderate exercise and free exposure to air are beneficial. But if the plethoric state be considerable, and likely to be productive of immediate ill consequences, the most eligible plan of management is complete rest, and nearly total abstinence for a few days. By this method the necessity for evacuant remedies is often wholly superseded. The preparations of iron, as means of promoting the uterine secretion, are wholly inadmissible while the plethoric state continues.

When amenorrhœa is either unaccompanied by the plethoric state, or is marked by an enfeebled state of the functions at large, room is afforded for the more free employment of the remedies proved to have a more or less direct effect in the restoration of the uterine secretion. These remedies, in technical language, are termed Emmenagogues. Many of the more powerful substances contained in the catalogue of emmenagogues are far from safe; all mention of these is therefore here omitted. The preparations of iron, either alone or combined with bitter tonics, the preparations of iodine, the preparations of aloes, to all of which sufficient reference has already been made, still stand at the head of the list. Alterative medicines, such as the milder preparations of mercury, are sometimes necessary to restore the general health. Blue pill, the gray powder—hydrargyrum cum calce, as it is technically called—or small doses of calomel, are of this character. But these forms of mercury should never be prescribed without the sanction of a medical man; since, while mercury is powerful for

the cure of disease, it is also one of the medicines which, given under improper circumstances, is most detrimental to health. The beneficial effects of mercury rightly used are beyond all question; but no substance called a remedy has more lives to answer for.

The essential oil of turpentine—commonly called, in its purified form, the spirits of turpentine—is an excellent remedy in amenorrhœa; and is doubly useful, because it is commonly well adapted to counteract such derangements of the bowels, and such hysteric symptoms as often attend the disease in question. The essential oil of turpentine may be given daily, to the extent of one or two tea-spoonfuls, without much inconvenience, for several days in succession. It is apt at first to produce unpleasant symptoms; but the patient soon becomes accustomed to the medicine. For the first two or three mornings of its use, the patient should remain in bed for a short time after it is taken; by which precaution probably all inconvenience will be avoided. It is taken with honey, mucilage of gum arabic, or milk. It is common to unite it with castor-oil, in nearly equal proportions; and this method is perhaps the best to begin with, in case its irritating effects should be prolonged by a failure of any operation on the bowels. The essential oil of turpentine is apt to irritate the urinary organs. This inconvenience is more readily produced by ten or twenty drops than by the larger doses. When it is desirable to continue the use of the essential oil of turpentine for a considerable time, it should be stopped for one or two days, at intervals of four or five days, while in the mean time bland fluids are freely drank; with which precautions hardly any inconvenience is ever experienced. Sometimes the essential oil of turpentine is employed in the form of lavement; that is, of clyster. A table-spoonful may be used daily, along with half a wine-pint of warmed milk or thin starch. Assafœtida is another remedy of much service in amenorrhœa, and in the hysteric symptoms apt to arise at the same time. Assafœtida is given to the extent of five grains, three or four times a-day, in the form of pills. It is also excellent in the form of lavement, one or two drachms being diffused, by means of mucilage, through a pint of tepid water.

The warm foot-bath, the warm hip-bath, and the warm bath, are of excellent service in amenorrhœa. Electricity, by shocks through the lower part of the trunk of the body, or galvanism, employed in like manner, are often of great use. Along with the remedies now enumerated, such a mode of life as is free from debilitating causes and depressing passions, while it tends to make existence an enjoyment rather than a burden, must, by all possible means, be promoted.

Dysmenorrhœa, or Uneasiness attendant on the Periodical Uterine Secretion.—What is technically termed dysmenorrhœa is a train of uneasy feelings attendant on each return of the uterine secretion. The kinds of uneasiness are chiefly pain of the loins, tenderness on pressure at the lower part of the bowels, or even over the whole anterior region of the bowels and stomach; darting colic pains; squeamishness; looseness; painful affections of the bladder; frequent hysteric symptoms. This train of symptoms generally goes on increasing, from a few hours to a few days, before the secretion becomes established, and when it is established, suddenly stops. The secretion is often, though not always scanty. A good deal of variety occurs in the proper treatment, owing to the various circumstances of different constitutions under which this disorder takes place. Sometimes cupping or leeches are necessary; and saline purgatives, a short time before the expected appearance of the secretion. The warm bath is of frequent use, even the foot-bath, and fomentations are not to be neglected. Opiates are very generally beneficial. But in the case of a malady which often proves a source of constantly-recurring distress for many years, the assistance of a judicious medical man is indispensable. It is his part to watch for a time the circumstances on which the dysmenorrhœa is dependent, and to suggest to the patient such changes in her mode of life as may conduce to the ultimate cure of the disease.

Menorrhagia.—The term menorrhagia, in its most received sense, denotes an increase in the natural quantity or frequency of the uterine secretion. The same term, however, is often employed to signify hemorrhage, or the discharge of actual blood from the uterus or womb. If those forms of hemorrhage which are connected with the state of pregnancy and with delivery are left out of account, there is less objection to including hemorrhage from the womb under menorrhagia. The uterine secretion, though it has nearly the same colour as blood, does not clot, like blood, when it collects in a mass. Thus there is a ground of distinction between the mere profuse discharge of the uterine secretion and actual hemorrhage from the womb.

As respects the amount of the secretion, there is a great difference in different individuals. It becomes necessary, therefore, to make every individual a standard of health for herself. If the secretion has become more profuse, or recurs oftener than was customary, at the same time that the health has become coincidently impaired, then, as respects that individual, it may be pronounced that the first-mentioned form of menorrhagia is present. It occurs under two states of the bodily frame, namely, in a plethoric state and in an enfeebled state.

In the former state, the increased secretion is often kept up by the causes which have created the plethora; and unless the health and comfort be much interfered with, it may not always be advisable to take measures for diminishing this increase. For such an increase may sometimes relieve the system from what might otherwise prove an unsafe fullness. At all events, if it is to be checked, means should be taken at the same time to bring the quantity of blood in the system within due bounds. Much more commonly, the profuse secretion takes place in females of no great vigour of constitution; and the effect of the additional drain on their system soon displays itself in an enfeebled state of health. The constitutional ill health consequent on increase of the uterine secretion seldom assumes an acute character; it belongs in general to the order of chronic maladies. But when actual blood, as known by its clotting, is discharged—for example, in consequence of exposure to fatigue and cold during menstruation—it sometimes happens that the disease is attended with all the symptoms of constitutional reaction and fever which belong to an acute attack of inflammation. In such cases the treatment is much the same as in acute inflammation. The more common case, however, even when the discharge is blood (as known by its clotting), is more of the chronic character. In this chronic form, when the discharge is blood, the symptoms, though not very different from those observed in mere chronic increase of the uterine secretion, are commonly more severe. There are pains in the loins, and in the region beneath the loins—a sensation of weight and uneasiness in the lower part of the trunk of the body; and while these wear off with the commencement of the secretion, or of the hemorrhage, there arise paleness of the countenance, languor, lassitude, and an inability to keep the body erect; and if the discharge be profuse, impaired vision, sounding in the ears, squeamishness, and faintness, followed by more permanent sallowness of the skin, and tendency to dropsical swellings of the lower limbs. Hemorrhage of the recurring chronic character from the uterus admits of a very important distinction into two kinds—the idiopathic and the symptomatic. When it occurs without any actual morbid alteration of the uterine system, such as is termed organic disease, the hemorrhage is properly called idiopathic; when, on the contrary, it is dependent on some such morbid alteration, then it is called symptomatic uterine hemorrhage; it being, at the same time, altogether unconnected with pregnancy. When, then, chronic recurring uterine hemorrhage has arisen, the first step—and a most important step it is—should be to ascertain how far it is or is not dependent

upon some such disease as polypus, scirrhus, hydatids, mole, or the like.

In every form of menorrhagia, whether the discharge be the natural secretion or blood, rest in the recumbent posture is necessary. Rest in hemorrhages is not merely a piece of regimen to assist the treatment by remedies; it is an actual remedy,—because, by perfect rest in the horizontal posture, one of the ordinary forces concerned in the motion of the blood, namely, the compression of the veins by the muscles during their contraction, is suspended. If there be a plethoric state of the body, the appropriate remedies already adverted to must be had recourse to. If there be febrile reaction of an acute kind, the antiphlogistic treatment—including, it may be, venesection and cupping or leeching—and the antiphlogistic regimen—consisting chiefly in abstinence—must be adopted. More commonly, however, owing to the greater frequency of the more chronic character in these maladies, an opposite kind of treatment is requisite, along with rest and abstinence, namely, astringents and tonics, combined with narcotic sedatives.

The acetate of lead, commonly called the sugar of lead, combined with opium, is one of the most esteemed remedies at present in such hemorrhages. The dose of the sugar of lead is about three grains, united with one grain of opium; and this combination, in the form of pill, is repeated, at short intervals, for some time. But whoever employs such a remedy incurs a certain responsibility, since the sugar of lead ranks among poisons; and, moreover, by its too long continuance, may produce the disease named painter's colic, which has been known to prove fatal, though it had taken its origin from nothing beyond medicinal doses of the remedy. Dilute sulphuric acid is a safer astringent, and is prescribed even in cases where some degree of febrile excitement is present. The common infusion of roses contains a small quantity of dilute sulphuric acid; so that it may be given very freely, even to the extent of a pint in twenty-four hours. It is common, however, to give it in smaller quantities, with an additional proportion of the dilute sulphuric acid added. The dose of the dilute sulphuric acid is from ten to twenty drops, with a sufficiency of water, several times a-day. A pint of the infusion of roses contains less than a drachm; that is, less than sixty drops or minims of dilute sulphuric acid.

The sulphate of zinc, commonly called white vitriol, is a good and safe remedy in the profuse secretion. One grain may be given three times a-day for a long period. It is conveniently put into the form

of pill with extract of gentian; and, where a more powerful astringent is required, it may be combined with catechu, kino, or the extract of ratanhy. The Gallic acid has of late been used in obstinate menorrhagia with much success. The dose is three grains, three times a-day. It is made into pill with liquorice powder and confection of roses. The tincture of the muriate or sesquichloride of iron, before spoken of, is a good remedy in cases of menorrhagia, when there is nothing to contra-indicate the use of iron. As it often happens that menorrhagia is kept up by the weakened state of the uterine vessels, consequent on the feebleness of constitution induced by its long continuance, there is often room for all those remedies which serve to improve nutrition and to restore the general health. It seldom happens that the loss of blood goes so far at any one time as to create danger; but were such a case to occur, the same means are to be resorted to as in the event of dangerous hemorrhages connected with the puerperal state—local mechanical means to intercept the exit of the blood and cause its coagulation, the application of ice, and the like.

Leucorrhœa, or Whites.—When the natural secretion which in health bedews the mucous membrane of the uterine passages becomes increased in quantity, the simplest form of leucorrhœa is present. The increase of this secretion is analogous to the catarrhal discharges of the nasal and bronchial passages. More or less of inflammatory action may affect the membrane, the natural secretion of which is increased; and in proportion as inflammatory action has been set up in the membrane is the secretion altered in character as well as increased in quantity:—hence it happens that the discharge in leucorrhœa may even assume a purulent character. Ulcerations of the neck of the womb have lately been regarded as the origin of the more obstinate forms of leucorrhœa. It cannot be denied that ulcerations, or excoriations resembling ulcerations, are often present in this disease, nevertheless the presence of these may be assumed as probable when the disease resists ordinary treatment, and the requisite applications made without that frequent use of those means of inspecting the parts and applying remedies—the recent rage for which in this country, adopted from across the channel, threatens to extinguish the modesty so long characteristic of our countrywomen.

The more acute forms of leucorrhœa are often attended with marked constitutional disturbance, indicated by shiverings, sickness at the stomach, headache, and accelerated pulse. As respects the local

symptoms, there is often at first some degree of itching, a sense of fullness and uneasiness in the parts adjacent to the womb, pain in the loins, and in the sacral region that is immediately below the loins; the external parts are swelled, the glands at the upper part of the thigh enlarged, and when the discharge becomes fully established, a great part of the uneasiness wears away. Sometimes the bladder becomes involved, and there is pain in passing the urine; and that fluid may even exhibit a frothy aspect. The chronic form may be the sequel of the acute, or may arise independently. There is no acute pain, but generally a sense of gnawing in the sacral region. There is usually considerable derangement of health, particularly in the digestive organs: not unfrequently palpitations and tendency to dropsical swellings of the ankles; even the eye-lids are often tender; there is much languor, sallowness of countenance and emaciation, and often hysteric symptoms. The chronic disease, when of long continuance, is much less manageable than the acute. In the acute, leeches and cupping are sometimes beneficial; and blistering the sacral region is useful in both the acute and chronic states. In the acute form the diet should be farinaceous. Only the mildest laxatives should be used, and at first there should be complete rest; and even in the latter stages walking should never be carried to fatigue. So long as the disease is acute, no stronger injection should be used than the daily use of tepid water. In the chronic form the general health and the local treatment are the two great objects of attention; and tonic remedies, and diet, require to be adjusted with a skillful hand. Great attention must be paid to the digestive function, and the choice of such food as the patient can, in the first instance, receive without discomfort. The warm aromatic tonics and port wine are often found to answer. The warmer tonics are cascarilla, cusparia, canella; these may be given in the form of infusion or tincture. The tepid bath is of much service. Free ablution is quite essential to the cure; and if the patient can bear the daily use of the cold hip-bath for this purpose, great benefit may be obtained. The tepid salt-water bath is often of excellent service to the general health. Sometimes astringents are given internally, with a view to check the local discharge; and with the same object some remedies, which exert a peculiar influence on mucous membrane, are taken by the mouth. These remedies, though held in contempt by many practitioners, are often found sufficient for the cure, and are in some respects to be preferred to local treatment. The astringents employed in this manner are alum, particularly alum combined with kino, for which

there is a formula in one of the pharmacopœias; kino combined with opium as in the compound powder of kino; the dose of the compound alum powder is twenty grains, several times a-day; that of the compound kino powder is the same, less frequently repeated, as in every twenty grains there is a grain of opium. The uva ursi, or bear's foot arbutus, is also a good astringent; the dose is twenty grains of the powder. When the stomach will bear it in sufficient quantity, lime water is a proper remedy; it is given with milk, equal parts of each to the extent of twelve ounces, or a pint of each daily. Among the remedies which act through the general system on the mucous membranes are the essential oil of turpentine, the cubeb pepper, the balsam of copaiba, also cantharides; but the last should never be used unless under the superintendence of a medical man. Among the local remedies the vegetable astringents are the safest, such as the decoction of oak bark, the infusion of galls, the watery solution of kino, and of catechu. The nitrate of silver has been much employed of late in obstinate cases as a local remedy, but that must be confined to the hands of medical men.

Leucorrhœa of Children.—A purulent discharge, that is, a discharge of matter, sometimes takes place from the sexual passages in young female children. The affection appears to be the result of an inflammation of the membrane of the uterine passage, and is met with from a very early age up to eight or nine years. It often arises from teething, or other local causes of irritation, or from worms and uncleanly habits. It would seem that it sometimes becomes epidemic; and Mr. Wilde has lately published an account of a number of cases of this disease, which occurred about the same time in Dublin. It is long since Sir Astley Cooper, in his lectures, showed that false accusations have often been founded on this disease of young children; and most medical jurists have noticed the same thing, not only in this country but also on the Continent. At first sight it seems incredible that such things should happen in our age; but the incredulous may read Mr. Wilde's little pamphlet, and see with what virulence, even on the part of persons who should be better informed, such accusations have been persisted in. Sir Walter Scott tells us, in his book on Demonology and Witchcraft, what adepts children are in lying; and Mr. Wilde's pamphlet is an additional practical illustration of the truth of a remark which should not escape the recollection of parents.

CHAPTER XVII.

DROPSIES.

The term Dropsy is understood to mean the abnormal deposition of a watery fluid in certain parts of the body.

Dropsy may be general or local; that is, it may be spread over the body, or be restricted to certain localities. When general, it is termed

General Dropsy, or Anasarca, which is the deposition of a watery fluid from the blood into the cellular tissue, which lies directly underneath the skin with or without its extension to the deep-seated cavities. Its ordinary course is to commence at the ankles and feet, and thence to proceed upwards towards the knees. Should it continue to progress, it may then be observed in the hands and fore arms, and at the same time will proceed up the thighs, should it still further progress it will attack the trunk and face, and in severe cases all these various parts remain dropsical at the same time; but even then the deposit is the greatest in the parts most dependent.

There is not much difficulty in distinguishing the disease. At first the legs appear somewhat fuller, and feel a little harder, and a sensation of stiffness or tightness is experienced. In acute cases this is accompanied by fever, with heat of skin, and other evidences of general derangement; but in ordinary cases there is no additional general disturbance, and the skin retains only its ordinary temperature. As the deposit increases the tissue gives away, and the skin becoming softer will pit, if the finger be strongly pressed into it. The next steps are simply those of degree, viz., the increasing size, the deepening pits on pressure, with the mark of the stocking and shoes on the foot, diminution of temperature in the part, and increasing extent of the effusion. The state of the general system will depend upon the cause of the dropsy, and upon the degree in which the functions of life are interfered with.

Anasarca is frequently a sequence to scarlet fever, in which case the dropsy is of the acute kind, and may appear in any part of the body. The attendant fever, with its heat of skin and thirst, is considerable, and sooner or later symptoms of excitement of the brain occur. The kidney is especially apt to take on disease, and the serous membranes of the body, as the pleura, to be affected; the

danger is very imminent, and the issue is generally unfavourable. The treatment is one of much difficulty; for it is necessary to reduce inflammation, and yet sustain the system. Small general bleedings and leeches, or cupping glasses to the loins or the back of the neck, according to the seat of local mischief; calomel in grain doses every four hours; hot baths; doses of tartar emetic to excite the action of the skin; gentle purgatives, as castor-oil, as frequently as can well be borne, will be the proper mode of treatment; with this should be enjoined perfect rest, moderate warmth, light broths, and farinaceous food. As the fever subsides the strength must be further supported by good beef-tea, and meat, and tonics.

Anasarca also occurs towards the fatal termination of all long-continued diseases. In such cases, whether arising from general exhaustion, or decay, or from local disease, the blood becomes impoverished, and the vessels lose their tone. The case presupposes that nothing can be done, but the indications would be to keep up the powers of the system.

The most common cause of anasarca is organic disease of some vascular organ, especially the liver; and is met with chiefly in persons who have lived in hot climates, or who have been addicted to the abuse of ardent spirits.

Disease of the kidney, and especially that form known as "Bright's disease" (page 153) is a frequent cause of dropsy; and asthma, and other conditions of the lungs which seriously impede the circulation of blood, produce it.

Treatment in all these cases is of little avail when the disease has far advanced. The general plan, independent of attention to the local disease, is to keep up the system, to case the body in flannel, but to be careful that the skin is not irritated or broken; for if a wound be produced it is difficult to heal. The body must be kept moderately warm, and especially the extremities. The legs must be raised, and exercise taken in the open air, if the state of the patient permit. Little is to be done in the way of medicine, except to keep the bowels in a good condition; to give good vegetable tonics, as gentian, or iron, and to add to the gentian five grains of the iodide of potassium, three times a-day. Should the skin of the extremities be ready to burst, it may be punctured here and there with a needle, which will permit the fluid to drain away to a wonderful extent.

It must be borne in mind that the sensibility of the skin is materially lessened in such cases, and therefore the patient may not

be aware of the cold state of the extremities, or of a disposition which lying long in one position may give to the formation of sloughs. The attendant should therefore watch and examine the parts daily. A water bed is exceedingly convenient in dropsies.

Ascites, or dropsy of the investing membrane of the bowels, may proceed so far as to form an accumulation of many gallons of water.

The danger of the disease will mainly depend upon the cause of it, although the obstruction to the circulation of the blood, and the passage of matter through the bowels, induced by the presence of the water, will have a serious import. As a whole, the case is one of very grave consequence.

When the disease has originated in inflammation, and that in any degree continues, it will be proper to seek to lower it by local bleeding or blisters, and the administration of calomel and opium every four hours. If the system will bear it, even more lowering measures should be taken, as general bleeding and tartar emetic; but such is seldom permissible. Aperients of the saline kind (except the kidney be the source of mischief), with nitrate of potass, and other substances, as dandelion tea, to increase the flow of urine, should be regularly and freely administered. The system should also be supported so far as not to increase or maintain fever. It is sometimes necessary in such cases to re-apply the blisters, and to dress them with mercurial ointment, since local irritation is of service, and the introduction of the mercury very valuable.

Hydrothorax, or dropsy of the pleura, may attack one or both sides of the chest. Its most common cause is pleurisy; but it also occurs from congestion of the lungs, and in the progress of general dropsy. The fluid will fall by its own weight to the lowest part of the chest, and remain there for some time without its existence being detected. As the quantity increases, the expansion of the lungs is interfered with, and a sense of difficulty in respiration follows. When the quantity of water increases very slowly, the lung accommodates itself to the pressure exerted upon it; and the accumulation may be very considerable before its existence is suspected. The state of the breathing calls attention to it. A sense of oppression in respiration is therefore the first sign of this affection, an oppression which is increased if the patient lie upon the opposite side, and which is relieved when the trunk is nearly in an erect position. When the chest is about half full, the water may be distinctly heard by the physician, and felt by the patient on any

sudden motion of the body, and especially when it is shaken from side to side, as if a jar half full with water were shaken. At this period and later, the side of the chest, in which the dropsy has occurred, may be observed to bulge, and the spaces between the ribs will be wider and more prominent. The oppression of the lungs, and also of the heart, soon interferes with the general circulation, and a blueness of the skin appears, with a disposition to congestion of the brain or other organs, and to the formation of general dropsy. This will, of course, be the greater if both sides of the chest be affected, and be proportioned to the quantity of water and the time during which the disease has continued. Besides these symptoms, the system will be influenced by the cause of the complaint, and if that have been inflammation, some excitement will remain long after the true inflammation has subsided. This will be shown by feverish heat and thirst, and some lancinating pains, more or less acute, in the side. Moreover in the latter case the effusion of water will take place most rapidly, and usually after a short but serious illness, and thus, by the suddenness and degree of the pressure exerted by it, the functions of the lungs and heart will be more readily and seriously impeded. When the acute stage has passed, the treatment assimilates itself very much to that which is required in general dropsy. The health must be sustained by generous diet, or tonics, as bark and gentian, and, if possible, by carriage exercise. Calomel in grain doses thrice a-day, until the gums feel slightly sore, and a coppery taste is perceived, in the mouth, or five grains thrice a-day of the iodide of potassium may be exhibited; also nitrate of potass in ten-grain doses thrice a-day, to excite the kidneys; with general friction to the body, but especially to the extremities. Flannel and a moderate degree of warmth are also very necessary. By these remedies it may be that the further effusion will be prevented, and the water already deposited gradually absorbed. But in some cases, and more particularly in those following inflammation, the whole cavity becomes filled with the fluid, and the pressure upon the lungs induces fear of sudden suffocation. In such cases we cannot wait for the slow action of the calomel and other remedies to promote absorption, but must let out the fluid. This is effected by making an incision through the skin between two ribs, and then thrusting a large trochar into the chest, through which the fluid gradually but quickly escapes. By this mode nearly the whole of the dropsy may be at once removed; but the disease is not thus cured, for in all probability the fluid will be again deposited.

HYDROPERICARDIUM, or dropsy of the bag of the heart, may occur from precisely the same causes as that of the chest, viz., inflammation, distension of the contained organ or heart, and the progress of general dropsy. The disease is far more serious than dropsy of the chest, because, as the free action of the heart is more necessary to health, so is any impediment—a slight one even—to its action more likely to induce disease, and to end in death. This disease must always be regarded as a highly dangerous one. It is distinguished by a bulging over the region of the heart, with a sense of suffocation on pressure, and yielding a full sound when percussed with the finger, and more or less disturbance of the circulation. Assuming it to have arisen from inflammation, and therefore to be local, it can rarely exist alone for any lengthened period, but must, sooner or later, induce congestion and dropsy of the lung, and general dropsy. When it occurs from obstacles to the circulation offered by disease in other organs, or is met with in the progress of general dropsy, it is viewed as the forerunner of death. In its inflammatory form it has usually been found associated with, or caused by, an attack of acute rheumatism; and it has also arisen, in other instances, from poisoned blood. The treatment is as indicated for dropsies in general; but when rheumatic disease exists, it will be proper to add wine of colchicum in fifteen-drop doses every four hours. Except in a few recent cases, the pericardium has not been opened to give discharge to the fluid. The instances, however, in which this operation has been performed prove that the performance of it is not attended with the danger which was formerly anticipated.

It is needless to remark that the entire treatment of all these diseases must be confided absolutely to the medical practitioner.

HYDROCEPHALUS, or dropsy of the brain, occurs, for the most part, in children or very young persons, whose heads are observed to be unnaturally formed and unusually large. In many instances it exists before birth.

The brain is surrounded on its outer surface by a membrane precisely similar to that of the heart and lungs, and which also forms a shut sac. This bag-like membrane, like the others, is also moistened on its inner surface by a dew or vapour of a watery character; and it is in this that the water in dropsy principally forms. This membranous bag is continuous with one which incloses the spinal marrow through nearly its whole extent, and which is also the seat of dropsical effusion; so much so, that dropsy in the membranes of one part must, to a considerable extent, involve the

membranes of the other part. But besides this cavity (if that term may be applied to a bag which has its sides so close as to rub against each other) there are also several small ones within the structure of the brain; and these are also lined by a similar membrane, and have a similar watery secretion.

Dropsy of the brain may then occupy one or both of these two parts. The position of the effusion is, however, not a matter of indifference; for, since the most vital parts of the brain are placed within the structure, and in direct relation to the small cavities referred to, any pressure from within must be more serious in its consequences than an equal pressure from without.

There is at all times a slight quantity of fluid in these cavities; not injurious from its pressure, but really beneficial, by permitting free motion of one part of the brain upon another, or of the whole brain in the various motions of the body. A very slight excess, however, in itself constitutes a disease. Now, since the cavity of the skull is filled, or very nearly so, in a state of health, and the skull on the outside cannot well be compressed, and the brain on the inside cannot well sustain pressure, what must be the issue? The effusion usually takes place in early life; that is, at a period when the bones have not attained their state of complete hardness,—when the system readily yields to impressions, and when the function of growth or enlargement proceeds rapidly. Moreover, at that time the brain contains a larger proportion of water, and submits somewhat less fatally to compression.

When water is first deposited in the membranous bag of the brain, it falls to the bottom of the skull, and passes into the spine. As it increases it obtains room by compressing the brain a little, and by expanding the skull, but more particularly by the latter process; and to so great an extent may this proceed, that the skull may become by expansion as thin as writing-paper, and acquire twice or thrice, or even more times, its natural size. The brain, however, suffers; and in long-continued dropsy it is not unusual to find the patient idiotic, and the growth and development of the body greatly impeded. The end, however, in all such cases, must be fatal. When the effusion has entered into the cavities or ventricles of the brain before referred to, it induces enlargement of these cavities, and a thinning, by distension, of the upper part of the brain, so that it is sometimes reduced to a mere layer. This is a more important form of the disease, since its immediate action is to destroy the integrity of the brain, and interrupt its functions.

It is a matter of dispute whether this condition is necessarily the result of inflammation; but this matters little, since the treatment can have no reference to that prior disease. What, then, can be done to relieve? Almost nothing. It is proper to support the system, and to keep up its power by good food, by tonics, and by exercise. It is also right, for a time, to give calomel or iodide of potassium, and nitrate of potass, with a view of removing the fluid by absorption; and in some instances it is advisable to apply and re-apply blisters to the neck or head, and to dress them with mercurial ointment. When the disease has far advanced, it is far better to leave off local applications; and, at all periods, it would be unwise to task the mental faculties.

When the head of a child is unusually large, and perhaps peculiarly formed, the mother is very apt to fancy that it must have water in the head. But if the health continue good, or, if not so, if the mind retain all its powers, she may rest assured that the head is naturally formed; for although the disease, at its earliest period, is not easy of detection, it is quite clear that it could not have advanced so far as to give a manifest enlargement to the skull without inducing such mischief in the brain and body as would make it evident at a glance. The only point of fallacy is this, that the disease usually occurs in children of the scrofulous temperament, in which the brain is unusually active, and the child oftentimes precocious; and therefore such an amount of disease as would only a little lessen the activity of the mind, would scarcely be perceptible from that guide alone. But in this case it is proper to compare the mental vigour of the present moment with that which previously existed; and if it remains equal, and the more so if it be superior to its former state, there can be no such disease within the skull.

There is another form of water on the head, which has long been said to constitute a form of apoplexy; for it has been found to exist in cases of sudden death, when the symptoms have been referable to the head, and yet no other altered condition was observed after death. Since, as we have already observed, the bag and cavities of the brain do secrete a watery fluid, there is some reason to infer that this secretion might, in the cases referred to, have simply increased in quantity; but while it is difficult to prove a negative all the principles of medicine rather lead us to seek for an anterior and separate cause. This cause is said to be congestion of the brain, and we have already seen that congestion of a part is very apt to induce dropsy in that or other parts; moreover the suddenness of an attack of con-

gestive apoplexy corresponds to that of the so-called serous apoplexy; that is, the patient falls suddenly, without warning, and is totally unconscious, and if not soon relieved he speedily dies. The alleged points of difference are, that with congestion there is blackness of the face, full pulse, and hot skin, while the opposites are observed in serous apoplexy. It must however be remarked that these evidences vary with the full or other conditions of the body, the period of life, and the mode of attack. Moreover, since the signs of so-called serous apoplexy are negative, no one would venture so far to act upon them as to propose a treatment differing from that used in congestive apoplexy. It is also further believed, that this disease is oftentimes associated with a diseased state of the heart, in which its structure is partially converted into fat or oil.

There is no treatment therefore for this form of dropsy, since it is not the dropsy but the congestion which constitutes the disease. The reader is therefore referred to the remarks on apoplexy.

A third variety of dropsy of the brain is found in connection with inflammation. Inflammation of the brain, too, is most common in children, and most especially in those of scrofulous temperament. In such there is usually a deposit of tubercle in the brain. This tubercle is also met with in the lungs in consumption, and in other parts of the body, and is apt everywhere at some period to set up fatal inflammation. It is also very apt to occur at the period of teething.

The inflammation which is followed by effusion of a watery fluid is also oftentimes met with in adults, and may result from injury to the head, from exposure to the sun, from cold, or from a diseased state of the blood. Both forms of inflammation are highly dangerous, and the latter one is much more speedy in its course than the former. The symptoms which are most relied upon, to indicate its occurrence, are progressive insensibility, and at length loss of consciousness. Pinching scarcely arouses it. The faculty of sight is lost, so that the light does not contract the pupil, and a candle may be held before the eye without causing it to blink. A glassy appearance is put on, and the eye is usually directed upwards. The hearing is also lost. The motions of the bowels take place involuntarily; the patient lies helpless, and almost without making any motion whatever. If the effusion be considerable at the base of the brain, respiration and swallowing will be impeded, and the sufferer will soon die.

The treatment of this form is that of the inflammation of the brain, and requires the continued administration of one or two

grain doses of calomel every three hours; blisters and mercurial ointment to the head; nitrate of potass, and other remedies, for fever, to excite the action of the skin and kidneys. Stimulating the feet by mustard plasters, or mustard foot-baths, is also a valuable remedy (see page 184).

When the disease occurs in children, as above mentioned, it is sometimes relieved if salivation can be produced; but it is found by experience that two hundred grains and upwards of calomel may be taken by a child in that condition without inducing salivation. The disease is, however, to be regarded as dangerous in the highest degree.

Dropsy of the Eye-ball usually occurs in two parts, viz., in the anterior and posterior chambers, which are occupied by the aqueous or watery humour, and posteriorly in the vitreous or glassy humour of the eye. This is rather a surgical than a medical question, and, moreover, is not fitted for discussion in a popular work, so that I have only to add that, like other dropsies, it enlarges a part or the whole of the eye, and by its presence will end in destroying the eye, with or without bursting it. In an advanced state it is usual to puncture the eye. It is believed to be at all times a local disease.

Dropsy of the Glottis, or Windpipe, occasionally occurs alone or in connection with general dropsy and other diseases. Its occurrence is rapid, and its effects fatal. It is probable that no treatment will avail, when the affection has really set in, except that of making an opening into the windpipe to admit the air, which cannot pass in the ordinary way.

Ovarian Dropsy.—This is confined to females, and is of frequent occurrence. The ovaries are two small organs, of the size of a split walnut, lying on either side of the womb, and connected with the latter by means of a band or ligament, and a tube called the Fallopian tube. Its function is essentially associated with that of the uterus, and as it is called into operation at frequently recurring periods, it appears to have a special predisposition to this disease. It is composed of numerous small cavities or cells, about the size of a barleycorn when performing their functions, and the dropsy may occupy one of such cells; or while one cell is especially enlarged and constitutes the bulk of the dropsy, some of the other cells may take on the diseased action to a lesser extent. When the latter is the case, the connecting or intervening solid substance is also enlarged; so that the part, which in its natural condition would not weigh more than half an ounce, may, in this state of enlargement, have a weight

of many pounds. Moreover one ovary only may be affected, and that is usually the case. The ovary, then, being placed on the side, and deeply in either groin, the first appearance of the dropsy will be in that position; and as it usually occurs without pain, and proceeds slowly, the patient is unaware of its existence for a long period, and until the tumour has so much enlarged as to alter the form of the abdomen. At this period, however, the enlarged ovary, from its position, must interfere with the action of the bladder, inducing an unusually frequent disposition to empty that viscus, and also with the bowel, causing constipation and some difficulty in passing the feces. There will also be a sense of bearing down.

The progress of the case is simply that of enlargement of the tumour, and consequently of the whole abdomen. The tumour, although it may incline a little toward its own side, will soon occupy the whole front of the abdomen, pushing the bowels backwards towards the spine, and by its weight interfering with the passage of fece and the urine, and the function of respiration, and the full enjoyment of bodily exercise. It will give a dull sound on percussion; and tapping it with the end of the finger on the one side, while the hand is applied to it on the other, will prove in this, as in ascites, the existence of a fluid.

It is at all times of importance to distinguish ovarian dropsy from pregnancy and from ascites, and this at first, and on any particular day, is not at all times easy. It is often-times needful to watch the progress of the case.

It may be popularly distinguished from pregnancy by its slow growth and enlargement, its lateral position, its more perfect fluctuation on percussion (but if the tumour be in great part solid this test will not apply), the absence of the usual morning sickness, of any change in the mammæ, or sensation of motion and life in the child, and lastly, by the absence of the sound of the child's heart, as heard by the stethoscope.

It may usually be distinguished from ascites by the following characters:—In ascites the health is usually bad, the progress of the swelling tolerably rapid, the figure of the swelling and of the abdomen even, the bowels pushed up towards the chest, giving there a clear sound on percussion; while in ovarian dropsy the health may remain good, the progress is generally slow, the tumour is uneven and in front, so that the abdomen is not so broad and full on the sides, the intestines are thrown back, and therefore do not give a clear sound at the navel, but they may yield a clear sound on one or both groins.

The progress of the case being slow, and the organ not a vital one, the disease may, and usually does, last for many years, and the tumour may attain to so great a size as to hold several gallons of fluid. Nothing can be popularly recommended to arrest its progress or to remove it; and as the rule is that the case shall proceed, a period will arrive when it may be necessary to tap it and remove the water. This should be deferred as long as possible, since the cavity will refill the sooner after the operation. Sometimes the tumour has been injected with port wine or iodine, and with some success; but since this and every other mode fails, it has been recommended to cut open the abdomen and take away the whole tumour. This is a very dangerous operation, and has caused the death of a majority of the patients operated upon. It is better to submit with patience, taking care to keep the bowels in order, and the system in health by exercise, moderate living, and ease of mind. It is highly convenient to wear a bandage, so fashioned that it will rest under the bulging part of the tumour, and passing round the back hold it as it were in a sling.

CHAPTER XVIII.

DISEASES OF THE BRAIN AND NERVOUS SYSTEM.

The nervous system in man consists of the encephalon, the spinal chord, the great sympathetic, and the nerves. The encephalon is that part of the nervous system which is lodged within the skull, consisting of the brain proper, or cerebrum; the lesser brain, or cerebellum; the medulla oblongata, or prolongation of the spinal chord within the skull; the tuber annulare immediately before the medulla oblongata; the crura of the cerebellum and the crura of the cerebrum, which extend respectively from the tuber annulare to the cerebellum and the cerebrum. The spinal cord occupies the canal of the backbone, and is continuous with the medulla oblongata by the great foramen of the occipital bone of the skull. Perhaps a more distinct view of the great centre of the nervous system in man is obtained by tracing it from the spinal canal upwards into the skull. Thus there is a great central column formed by the spinal marrow within the spinal canal; the medulla oblongata, its prolongation within the skull; the protuberance termed tuber annulare at the anterior and superior part of the medulla oblongata; and finally, by the great

cords termed crura of the cerebellum and crura of the cerebrum, which extend from this tuber annulare respectively into the cerebellum and cerebrum. It has only to be added, that this great central column, nearly perpendicular throughout in man, is surmounted by the cerebellum and the cerebrum, and our view of the great centre of the nervous system is complete. The nerves do not connect themselves with the cerebrum and cerebellum, but with the several parts of the central perpendicular column just described. The several parts of the nervous system just referred to, belong to what is sometimes termed the nervous system of animal life; the nerves connected with it, namely, forty-three or forty-four pairs, being distributed to the skin, the organs of the senses, and the voluntary muscles. The remaining part of the nervous system, termed the sympathetic system, or the system of organic life, exhibits a number of small fleshy looking bodies, named ganglia, situated chiefly immediately in front of the spinal column, and by means of connecting filaments forming a chain extending from the skull to the coccyx, or lowest bone of the spinal column. The nerves derived from these smaller centres are distributed to the organs, the functions of which are directly concerned in the maintenance of the body, or to the organs of what are termed the vegetative functions.

Not only, then, does the nervous system consist of a considerable number of distinct parts, to each of which a separate function is assigned; but it is also made up, in most parts, of at least two substances, namely, of white or tubular fibres, and of gray or cineritious fibres, each possessed of a separate office in the animal economy. Hence it follows, that the same kind of morbid action affecting one part of the nervous system does not necessarily produce a train of symptoms at all resembling those produced by it when it attacks another part; or, as it may be otherwise expressed, the diseases, that is to say, the trains of symptoms, produced by one kind of morbid action in different parts of the nervous system, depend on the character of the function belonging to each affected part.

Cephalalgia, or Headache.—Headache is a part of a great number of diseases; nevertheless, it is useful to consider headache under certain circumstances, as itself a disease. Whenever, then, headache is the prominent character of a present state of ill-health, and it is not apparent on what morbid condition it depends, it is proper, in a practical point of view, to regard the disease present as headache or cephalalgia, and to determine, if possible, to what particular derangement it is to be ascribed. Headache then, considered as

a disease, is of a chronic kind, or, at least, of a non-febrile character. Sometimes pain of the head is dependent on an affection of the external parts covering the skull—hence the distinction of external and internal headaches. External headaches are popularly called rheumatic headaches, and many of them are really of this description. Other forms of external headache are painful affections of the periosteum or membrane covering the external surface of the bones of the skull; and neuralgic headache, that is, painful affections of the nerves of the scalp depending on irritations often in distant parts of the body. The internal headaches are chiefly, 1st, headaches connected with derangement or disturbance of the circulation within the head; 2ndly, headaches symptomatic of derangement in the digestive organs; and 3rdly, headaches connected with organic alterations within the head.

The rheumatic headache is generally diffused over the head. In rare cases it affects exactly one-half of the head. Most commonly the pain is remitting; it is sensibly increased by the motion of the eyebrows, jaws, and adjacent parts, also by simple pressure and by percussion. As in other cases of rheumatic disease, there are rheumatic pains elsewhere in the body, and particularly in the face, neck, and shoulders. The pain is often described as like something grasping the affected part, or like something moving backwards and forwards in the part. The treatment, as in rheumatism, should be by alkalies and colchicum, hydriodate of potassa, and the other remedies usually employed in rheumatism. Headaches having their seat in the periosteum are sometimes benefited by fly-blisters. The hydriodate of potassa stands here also among the remedies. The treatment termed alterative is also often serviceable, such as moderate doses of mild mercurials, dilute nitric acid, sarsaparilla, guiacum, mezereon, sassafras. Sometimes incisions are required. Neuralgic headache, when distinctly periodical, is often subdued by the remedies termed anti-periodics, of which the chief are sulphate of quinine and arsenic. The sulphate of quinine is a safe remedy in general. The dose is from two to three grains several times a-day. It may be made into pill with some vegetable extract, such as the extract of gentian; or may be given dissolved in water by the aid of five or six drops of dilute sulphuric acid to each dose. The common form of arsenic in medicine is the arsenical solution—that is, a solution of the arsenite of potassa, each drachm of which contains half a grain of arsenic; that is to say, of arseneous acid, or the white arsenic of commerce. The dose, however, at first should not exceed five drops; but for any

one but a medical practitioner to meddle with such a remedy would be wholly unwarrantable.

In internal headaches, dependent on derangement of the circulation, there is much nicety in the treatment. It is undeniable that even medical men cannot always easily determine whether affections of the head be dependent on an increase or on a diminution of the due afflux of blood to the head. It seems hardly possible, therefore, to convey, in popular terms, any proper notion of the grounds on which opposite methods of treatment are to be adopted.

Headaches connected with derangements of the digestive organs are treated by those remedies common in indigestion and in hepatic obstructions—that is, disturbances in the secretion of bile. In the true bilious headache a vomit is often of great service.

In headaches, connected with organic disease within the skull, little else can be done than to enjoin rest, and the removal of everything which can create the slightest excitement. Such ordinary irritants as light, heat, noise, are sedulously to be avoided; while the regulation of the ordinary actions of the body is promoted by careful attention.

Inflammation within the Skull.—The two chief divisions of inflammatory disease within the skull are inflammation of the membranes of the brain, and inflammation of the substance of the brain. Under the name Phrenitis both kinds of inflammation were formerly placed. Within the present century a great many new names for these diseases have sprung up. Arachnitis and Meningitis are names applicable to inflammations of the membranes; Encephalitis is most commonly used to signify inflammation of the substance of the brain. The inflammation of the membranes, and that of the substance of the brain, may each exist in an acute or in a chronic form. Yet the acute inflammation of the membranes in general presents a greater degree of violence and rapidity of progress than the acute inflammation of the substance of the brain. Sometimes inflammation within the skull supervenes on previous diseases of the head, in which cases the characteristic symptoms are less striking. The violent acute primary form of inflammation of the membranes of the brain is marked by intense pain of the head; flushed face; redness of the eyes; contracted pupil; a wild expression of countenance; intolerance of light; violent delirium; with all the marks of vehement febrile reaction;—these symptoms at length pass into a state of stupor, with more or less rapid sinking.

In inflammation of the substance of the brain, there is sometimes, from the commencement, symptoms very similar to those just noticed

as indicating inflammation of the membranes, namely, severe pain of the head and delirium. In some cases, marks of disturbance of the stomach first appear, as continued vomiting; in others, the disease sets in with convulsions; and in a fourth form, it commences with loss of speech, and other apoplectic symptoms. Another kind of inflammation of the substance of the brain, terminating in effusion of serous fluid in the ventricles of the brain, is what is commonly called water of the head in children. Here, in the first stage, there is pain of the head, flushed face, and restlessness, with fever; then squinting, dilated pupils, double vision, and profound stupor. In the commencement the pulse is unusually frequent; it then becomes slow, and sometimes again very frequent,—or it is sometimes observed that a rapid and slow pulse alternate in quick succession (see page 175).

Myelitis is inflammation of the substance of the spinal cord; while the term Spinal Meningitis is applied to the inflammation of the membranes of the cord. Spinal meningitis is commonly a rapidly fatal disease. There is acute pain in the back, increased by motion, percussion, and pressure. The pain sometimes shoots round the chest or the abdomen. Contractions of the muscles are commonly present, varying with the seat of the disease. In inflammation of the substance of the cord, there is usually dull pain in some part of the back, loss of sensation and motion, or numbness, and impaired sensibility; the symptoms varying with the seat of the disease.

All these diseases are of the most serious character, such as no one destitute of medical experience can venture to treat. The remedies required are blood-letting, cupping, leeching, blistering, and other forms of counter-irritation; the application of cold, tartar-emetic, calomel, and other remedies, requiring for their proper adjustment all the resources of medical skill.

Delirium Tremens.—The brain-fever of drunkenness appears to have been one of the earliest names applied to the disease now termed delirium tremens. Till towards the close of the last century, this disease was generally regarded as a form of inflammation of the brain. This was a grave error; for the treatment which belongs to inflammation within the skull has a very baneful effect on delirium tremens. One of the most striking features of delirium tremens is wakefulness; there is great loquacity; the delirium is not usually so incoherent as in fever and inflammation of the brain, and commonly turns on something disagreeable, from which the patient wishes to escape. Trembling is by no means constantly present. The rules for distinguishing this disease from inflammation within the skull, and from incipient mental

derangement, are by no means sufficient without much practical experience. The great object is to procure sleep. Opium is the remedy employed for the purpose; but the doses required are too large to be administered by any one not conversant with medical practice. The abstraction of blood is very dangerous, yet is sometimes necessary. This disease is very apt to recur. The patient often recovers more than once, yet is finally cut off by the disease. Drunkards often die exhausted by hemorrhage from the bowels.

PALSY.—Palsy, or paralysis, signifies the inability to move a part naturally under the control of the will. One of the slightest forms of palsy is what every one must have observed—

PTOSIS, or the sinking of the eye-lid. But we must not ascribe every such case to palsy; the most common cause of this affection being the effect merely of an increased weight by the thickening of the part, so that the muscular fibres are not powerful enough to overcome the resistance. In short, in every instance in which an inability to move a part naturally under the control of the will has arisen, it is to be considered whether this inability does not depend on a preternatural resistance, before it be pronounced that palsy is present. For example, there are several forms of chronic lockjaw, in which the patient cannot open the mouth, not because the muscles—the office of which it is to open the mouth—are paralyzed, but because the antagonistic muscles which shut the mouth are in a state of chronic contraction. It is not impossible, however, that a chronic lockjaw might be the result of a palsy of the muscles which should open the mouth; for this would be exactly analogous to the contractions of the elbow-joints observed in the saturnine, or painter's colic—a disease arising from the noxious effect of the slow poison of lead on the living system. In the saturnine colic the muscles which extend or straighten the elbow-joints become paralyzed; the consequence of which is, that the muscles which bend these joints are permitted to shorten or draw themselves together permanently, so as to produce a corresponding chronic bent state of these joints. Sometimes a paralytic affection is confined to one side of the face—that is, from one half of the countenance all power of expression is gone; the features are blank, still, and unmeaning,—while the other half retains its natural aspect, except that the angle of the mouth is drawn a little awry. In short, the patient cannot laugh, weep, or frown, or express any emotion with one side of his face, while the features of the other may be in full play. As Dr. Watson, a great authority on this kind of local palsy says—"One half of the aspect is that of a sleeping or of a dead

person, or stares at you solemnly; the other half is alive and merry." In cases of this kind there is usually no deficiency of sensation. There is another description of affections of the face, in which there is a smaller amount of loss of motion, with a deficiency of sensibility over the whole of one side of the face. The insensibility is very exactly limited to one half, being terminated abruptly by the middle line; the accompanying defect of muscular motion is that of contracting the masseter and temporal muscles of the same side. The loss of motion in cases of this form is, however, much less conspicuous than the loss of sensibility, as the mouth, by means of other unaffected muscles, can be opened and shut. What is singular, the patients often complain of great pain in the very parts which are found to be totally destitute of sensibility. In a word, one side of the face may be cut, punctured, or burnt, without the slightest indication of sensibility; and yet, when these same parts are untouched, the patient may complain of the presence of constant excruciating pain in the same. All these singular circumstances admit of a complete physiological explanation. When there is a loss of sensibility over one half of the face, the fifth pair of cerebral nerves is diseased somewhere in its course; it is the nerve which gives sensibility to the face. The same includes some filaments concerned in motion—that is, in the contraction of the masseter and temporal muscles before spoken of—and therefore, along with the loss of sensibility in the parts supplied by the fifth nerve, there is loss of motion to the extent in which that nerve supplies muscles. As respects the constant pain often referred to the face in cases of this kind, it must be remembered that the law of sensation is, that the attendant consciousness has its local seat at the point to which ordinarily an impression is applied; that is, at the extremity of the nervous filaments affected by the impression. In such a case as that supposed, a cause of pain is applied somewhere in the course of the nerve, contrary to what takes places in health; and, in obedience to the ordinary law, the reference is made of the consciousness to the place where the extremities of that nerve are distributed. The great nerve of motion in the face is the portion of the seventh pair termed "portio dura." That portion of the seventh pair includes no nerve of sensibility; so that, when the "portio dura" of the seventh pair becomes diseased, there arises a loss of motor power on one side of the face, unaccompanied by any loss of sensibility. Thus it plainly appears that palsy, when confined to small regions of the body, depends on disease of the nerves distributed in those regions. When, however, a larger extent of the bodily frame

has lost its voluntary power, then a greater or less portion of the central organs of the nervous system, with which the nerves are connected, is found to be in a state of disease. Thus it was already mentioned that myelitis, or inflammation of the spinal marrow, is attended by palsy of the extremities.

There are two kinds of more general palsy, namely, PARAPLEGIA, affecting the lower part of the body, so that all below a line transverse to some part of the spinal canal is involved; and HEMIPLEGIA, when one half of the body, marked off by a vertical line, is the seat of the disease. Paraplegia may be so complete as to affect the whole frame below the junction of the head with the neck, constituting loss of motion and sensibility, without any other part of the nervous centre but the spinal cord being diseased; and it may decline from this completeness to a slight numbness and impairment of power in the lower extremities. Hemiplegia, even in its less complete forms, is an indication of disease of the head; and, indeed, hardly differs from apoplexy.

APOPLEXY.—The apoplectic seizure, in its most characteristic form, is quite sudden; the person falls down, and lies on the ground insensible; his breathing is performed slowly and with a loud snoring sound, technically termed stertor; his pulse is slow and full; the mouth and often great part of the face are drawn to one side; and fluid, sometimes frothy, issues from the mouth; the face is often flushed, and the temporal arteries often strongly throb; the pupils of the eyes may be natural and still contractile on the admission of light, or they may be unusually contracted, or, again, they may be preternaturally dilated. Sometimes there are manifest signs of loss of power on one side from the first; and in such cases there are occasionally convulsive movements on the other side. Most commonly, when anything is put into the mouth, the patient swallows; when this does not happen the case is very unfavourable. After a longer or shorter time, if the patient is to recover, sensibility becomes restored; but one side remains paralytic; that is, the form of palsy termed hemiplegia remains. The description now given applies to a certain proportion of cases coming under the head of apoplexy; but there is no small variety spread over the whole number of such attacks. A mere sudden attack of insensibility, with stertorous breathing, while the pulse continues perceptible, passing away after a time without leaving any hemiplegia behind, is not to be accounted apoplexy. Attacks of this kind, not followed by palsy, belong rather to epilepsy than to apoplexy. Thus hemiplegia is an

essential part of apoplexy; in short, a sudden hemiplegia, even without any period of insensibility, is so much the same as the complete apoplectic attack that many pathologists with reason regard them as merely slightly different forms of the same disease. Thus hemiplegia, as connecting itself so intimately with apoplexy, is a very different disease from paraplegia, and the several partial and local forms of palsy. One point of agreement, however, is common to the whole series of these diseases, namely, that their seat is in the nervous substance.

The particular alteration in the nervous substance, owing to which it fails of efficiency for its ordinary office, is not always of the same kind. It may be an organic change of substance, owing to diseased nutrition of a slow character; or it may be the effect of hemorrhage, by which the nervous matter is compressed, and unfitted for its usual function; or it may be simply an increased afflux of blood to its capillary vessels, by which a similar effect is produced, without the actual extravasation of blood.

Thus there is room for a considerable variety of treatment in cases of palsy and apoplexy, according to the several circumstances of the constitution under which the disease has arisen. And it is in the proper choice of remedies appropriate to each particular case that the skill of the experienced practitioner is discovered. Venesection, arteriotomy, cupping, leeches, blisters, setons, cold by water and ice, purgatives, electricity, galvanism, and other means may be necessary; but until the arrival of the medical man, the patient should be placed in the recumbent position, with his head elevated upon pillows, his neck-handkerchief removed, his shirt opened, his chest exposed, and cool air freely admitted.

Epilepsy.—The common English name for epilepsy is the Falling Sickness, since the person falls down, or rather is thrown on the ground with violence, by the sudden contraction of the great muscles of the trunk; and the onset of the attack is sometimes so sudden, that if the patient is walking with a burden on his head the burden is sometimes seen distinctly to fall through the air after he is already on the ground. The whole body is agitated by continuous muscular contractions; the contractions being usually of that kind which tend to straighten the trunk and extremities—that is, to bring them into a straight line. The head is often knocked against the ground by the same tendency in the neck; the muscles of the face and eyelids (the eyes being fixed) are in violent motion; the jaw is agitated with a convulsion by which the tongue,

which tends to be protruded, is often bitten and much lacerated, the teeth at the same time being loosened; the face is very generally swollen and livid—sometimes pale; the neck is swollen; froth, and sometimes blood, issue from the mouth; the pulse is often full and slow, and the breathing somewhat interrupted. After such symptoms have continued for some time, the preternatural motions cease; the patient continues to lie insensible on the ground, breathing stertoriously, while the pulse is slow, and often full. The sensibility by degrees returns, and the patient has no consciousness of anything which occurred during the fit. When the person subject to this disease is large and heavy, he often seriously hurts himself in the attacks.

This disease occurs under very different circumstances of the constitution. Sometimes the patient is pale and thin, at other times robust, stout, and plethoric. It is frequent in children, and in them it is often dependent on worms in the intestinal canal. It is often connected in grown persons with irritations of various kinds in the intestines, and the other organs concerned in digestion. Hence one of its principal forms has been called Enteric Epilepsy. It is also sometimes connected with derangement in the uterine function, and this form has been called Uterine Epilepsy. In these two forms the immediate cause is a sympathetic disturbance of the nervous system, originating in these distant organs of the body. But there is a large series of cases depending on direct irritation of the nervous system; such cases are usually placed under the head of Cerebral Epilepsy. The epilepsy of early life sometimes disappears at the time of puberty; but that of adult age is less frequently wholly removed. There are some, however, who suffer occasional attacks, and yet live through a long life. It is, however, in general one of the most serious diseases to which mankind is subject.

The remedies are very numerous, and require no small skill for their judicious application. Venesection, arteriotomy, cupping, and leeching, are among the remedies; but they must be used with a sparing hand, and only under particular circumstances. Blistering, setons, and the other various forms of counter-irritation, are more extensively useful. Cold to the head is of the utmost service. Purgatives are of much benefit, particularly croton-oil. The spirit of turpentine, as already described, is of great use. Various antispasmodics, such as valerian, assafœtida, and the like. Many metallic tonic remedies, such as nitrate of silver and preparations of copper, zinc, arsenic, bismuth, and iron, are often beneficially employed.

The valerian powder is a safe and often useful remedy, as tending at least to diminish the number of the fits. It should be given in considerable doses, perhaps to the extent of from one to three drachms in the day. The expressed juice of the cotyledon umbilicus, a species of pennywort, in the dose of a teaspoonful twice a-day, has of late been strongly recommended, and may be tried. Nitrate of silver is often very efficacious, but is liable to the objection, when carried far, of producing a permanent black metallic colour of the face. The preparations of copper, in the proper small dose, may be kept up for a long time without any bad effect on the health. Bismuth is also a safe remedy, and is often beneficial when disorder of the stomach attends the disease. The preparations of iron probably act on a principle altogether different from that on which the other metallic remedies are useful. In short, it would appear that the same rules apply for the administration of iron in epilepsy as in other diseases—that is, that it is beneficial only when a decided poverty of the blood is present—and that it may be very hurtful in the forms of epilepsy attended with the plethoric state. During the fit, nothing must be done but to prevent the patient injuring himself; and in the after treatment there is much room for regimen, particularly as respects the occupation of the mind, and breaking habitual currents of thought by frequent changes in the mode of life.

Hysteria is undoubtedly a disease in which the nervous system largely participates. It may be doubted, however, if it should be regarded as a primary disease of that system, except in so far as a peculiar excitability of the nervous substance gives the chief predisposition to the disease. It is, in a great degree, a mental disease, or, as it may be rather termed, an emotional disease, being most strictly connected with mental emotion. Whatever tends to increase unduly the natural susceptibility to emotion, also tends to augment the disposition to hysteria. Whatever weakens the control of volition over emotions apt to run to excess, in the same degree lays the individual open to attacks of hysteria. The peculiar symptoms of hysteria occur in females; but symptoms not indeed quite identical, yet in the closest degree analogous, occur also in males.

The symptoms of hysteria are very various. Sometimes a fit of hysteria consists in a single accession of fainting. A female suddenly faints, and after a longer or shorter period recovers completely, and yet a medical man may be right in terming the attack nothing else than a fit of hysteria. Sometimes the disease comes on in the form of a sudden difficulty of breathing. A young woman is seized with a

sudden fit of panting, with violent agitation of the whole chest, and this may either pass away after a while, and nothing further be observed, or she may complain of a choking in the throat, and sense of a ball moving in the region of the stomach and bowels, and then may swoon away, and in no long time recover and be as if nothing had happened. These are examples of slight forms of hysteria; but it is often a disease of the greatest severity. Sometimes it is so severe as to be with difficulty distinguished from epilepsy. Sometimes it takes the form of lock-jaw, and puts on distinctly the character of tetanus. There is, in short, hardly any disease which it may not at times imitate. What is singular, it may even assume the appearance of inflammatory diseases, particularly of the abdomen, such as inflammation of the peritoneum, or serous membrane lining the bowels, inflammation of the bowels themselves, inflammation of the liver, and the like. On the other hand it sometimes imitates apoplectic diseases. While, then, every medical man must be much on his guard against mistaking mere forms of hysteria for such diseases as require very active treatment, he must be equally careful not to neglect the proper treatment of severe diseases in excitable females, under the idea that they may be mere varieties of hysteria.

The remedies in hysteria are very numerous. Even venesection, arteriotomy, cupping, and leeching, are sometimes requisite. But it requires the skill of an experienced medical man to determine this point; since the unnecessary loss of blood tends to aggravate hysteric diseases. Purgatives are more easily managed; occasional purgatives, even of some strength, are useful; but the habitual use of purgatives is hurtful. The remedies in the fit itself are such cordials, and antispasmodics as the aromatic spirit of hartshorn, commonly termed the spirit of sal-volatile; also the fetid spirit of hartshorn, or ammoniated spirit of assafœtida; of each of which a teaspoonful well diluted with water may be given, and a similar dose of the compound or ammoniated tincture of valerian may be administered. The application of hartshorn to the nostrils is also useful, care being taken that it is not too strong. An old practice was to burn feathers under the nose, by which, along with some other odoriferous vapours, hartshorn is extricated. In fainting, fanning the face with a large fan, or piece of pasteboard, is of great service; and in severe cases, lavements composed of spirit of turpentine, well diluted, or of a mixture of assafœtida, are very useful.

As regards the permanent cure, the great object is to improve the general health, to correct all derangements of action, to strengthen

the nervous system, and by all possible means to promote the patient's control over her own feelings, that she may become able to resist the first beginnings of the disease.

When there is nothing to contra-indicate such treatment, the cold bath, the tepid bath, the cold shower-bath, or the tepid shower-bath, are of much utility. Most of the remedies known to be of service in apoplexy find a place in the severer forms of hysteria.

CHAPTER XIX.

DISEASES OF THE SKIN.

I HAVE already had occasion to describe several diseases, in the course of which the skin is very much affected. In some of these cases the condition of the skin forms a very prominent symptom, as in small pox, scarlet fever, and measles. In others it is less conspicuous, as in typhus and typhoid fevers. In all these cases, however, the cutaneous affection is but a consequence of a constitutional state, and no one now dreams of speaking of small pox or measles as skin affections, but as general diseases, with simultaneous affection of the skin. In strict language this is the case also with almost all the diseases which are commonly included under the term "diseases of the skin." As in small pox or measles, so in most other cases, there is some constitutional state which has, as its adjunct, marked cutaneous symptoms. Only as the skin-affection is, in these cases, the most prominent symptom, it is found more convenient in practice to study its characters, and to use them as a means of classification. Nevertheless it must always be borne in mind, that "diseases of the skin" is a phrase which implies only diseases with especial participation of the skin.

The causes of diseases of the skin—*i. e.* the constitutional condition which precedes the cutaneous affection—are very various.

Sometimes there is a general febrile state of the system, and substances are formed in the blood which are foreign to it, and cause irritation of the skin, as well as other excreting organs.

In other cases the process of digestion is especially in fault; the blood is therefore not properly formed, and, as a consequence, nutrition is badly carried on.

In a third class of cases the nervous system, and especially that part of it distributed in the skin, is diseased.

In a fourth class of cases, some poisonous material has entered the blood, and caused disease of it, and also of the solid structures; this is the case especially in secondary syphilis—a terrible affection which men by their vices inflict upon themselves.

In other cases, again, some singular diseases are produced by the presence and growth of parasitic plants on the skin. One disease, itch, is caused by an insect burrowing in the skin.

In the treatment of diseases of the skin it is usually necessary to give remedies which may cure the particular constitutional state. Attention to the food is of the greatest importance, as many skin diseases are produced entirely by errors of diet. Local measures are, however, often of great benefit, and the diseases caused by parasitic plants and by animals are often treated entirely by external applications.

The diseases of the skin are classified according to their anatomical characters; the following classes may be made.

I. Inflammations of the Skin.

(a.) Inflammations causing general redness of more or less of the skin, as Erythema and Roseola.

(b.) Inflammations causing papulæ, *i.e.* little red spots arising from inflammation of small parts of the skin, as Lichen and Strophulus.

(c.) Inflammations causing vesicles, as Eczema, Herpes, Rupia, and Pemphigus.

(d.) Inflammations causing pustules, as Impetigo and Ecthyma.

(e.) Inflammations causing tuberculoid swellings, as Lupus and Elephantiasis.

(f.) Inflammations attended with especial disease of the cuticle, as Lepra and Psoriasis.

II. Scaly diseases of the Skin.

1. Diseases connected especially with the nerves, though being also often more or less inflammatory, as Prurigo and Urticaria.
2. Diseases of the sebaceous follicles, as Acne and Sycosis.
3. Diseases of the pigment of the skin.
4. Diseases arising from parasitic plants, as Tinea or Ringworm, and Pityriasis.
5. Diseases arising from animaculæ, as Scabies or Itch.

There are some rarer forms of disease which I have not thought it necessary to include in this list.

I shall now proceed to make a few observations on each of these diseases.

ERYTHEMA and ROSEOLA.—Simple redness of the skin, not being from erysipelas, scarlet fever, &c., is called erythema or roseola. In erythema the redness is usually light in colour, and may affect any part of the body. There is often some amount of swelling, often in the form of nodules, which have a darker colour than the rest of the skin. There is usually some burning or itching. The redness is in larger or smaller patches, or spreads over a very considerable extent of surface. It is a disease of short duration, and in general easily cured by slight aperient and cooling medicines, and by applying cold water or Goulard's lotion to the skin.

A form of erythema, in which the nodules are large, occurs often in women whose monthly periods are not regular, and who have also a tendency to rheumatism. The nodules are usually seated along the shin-bones; they are often as large as walnuts, bluish in colour, and very painful. After aperient and cooling medicines, quinine is the best remedy.

When two adjacent folds of skin rub on each other, as in those of the skin in fat children, the skin becomes red from erythema. This is easily cured by cool lotions, or by sprinkling flour between the folds of the skin.

ROSEOLA is a more uncommon disease; the redness is darker, and affects often the extremities of the body—the hands and feet. It is a slight disease, lasting four or five days, and requires only simple cooling treatment.

LICHEN and STROPHULUS are very like each other, and are characterized by numerous small red points scattered over the skin. On pressure the redness disappears for a time. There is itching and tingling, especially in bed.

In children, strophulus often occurs a few days after birth, and is called "red gum." It is a thing of no importance.

There is a form of lichen which is very severe, and is therefore called "lichen agrius." It affects adults whose constitutions have been injured in various ways.

Another form is common in persons who have lately arrived in a tropical climate. It consists of numerous red spots, which itch and tingle greatly. It is called Lichen urticatus, or prickly heat.

In this country lichen is sometimes a febrile complaint, and is attended with great gastric derangement, such as nausea, loss of appetite, languor, and irritability of temper. The spots itch intensely,

and are often so much irritated by scratching as to become encrusted with blood.

The treatment of lichen is to live low, abstaining from meat, wine, and beer; taking fruits, vegetables, and milk. In an adult, two grains of blue pill every other night for three times, and every morning three tea-spoonsful of Epsom salts in infusion of roses, must be given; and in five or six days three table-spoonsful of infusion of bark, with six or eight drops of dilute nitric acid twice a-day. To allay the itching use a tepid bath (temperature 86° Fahr.)

The strophulus of new-born children is usually connected with acidity in the stomach, and is to be treated with a few grains of magnesia.

Eczema is an inflammation of the skin, attended by the formation of numerous little vesicles, which are set close together, and are filled with a clear or slightly turbid fluid. In two or three days they burst, discharge the fluid, and dry up. Usually, however, other vesicles rise near them, and run through the same course; so that there is a constant discharge of thin fluid, causing "weeping" of the part.

The disease is sometimes acute, but more usually is chronic, and lasts for a long time. It leads to some thickening of the skin, and to the formation of thin crusts. It is extremely difficult of cure, and in certain cases has a tendency to become pustular.

Eczema occurs sometimes from local irritation—sometimes it occurs from exposure to the sun—but often is connected with digestive disturbance and a general febrile state.

In its treatment, if there be fever, very little food must be given; the bowels must be freely opened, and cold applications must be used to the skin. When it has lasted some time, the same treatment, a little modified, must be continued. Very little meat and no fermented liquids should be taken. Alkaline medicines, especially the bicarbonate of potass, are of use. For an adult, two scruples of the bicarbonate, in a wine-glass of water, may be taken twice a-day. The tepid bath is useful, and lime-water may be put into it with advantage.

In chronic cases, weak lotions of lunar caustic (one grain to one ounce of water), or of creosote (four drops to one ounce of water), are of service. If the case is of very old standing, alkaline lotions (half a drachm of liquor potassæ to three ounces of water), followed by the ointment of the iodide of sulphur, twice a-day, are useful. In many cases a long treatment by a medical man is absolutely necessary.

Herpes.—This is always an acute affection, and is formed by a

number of little vesicles, filled with a clear fluid, which rise rapidly on a red inflamed ground. In three or four days these vesicles dry up and form a light scurf, and the redness of the skin disappears. Very frequently another spot, in the neighbourhood of the first, becomes affected, and runs through a similar course.

Sometimes, towards the end of acute diseases, vesicles of herpes appear round the mouth. It is usually considered a favourable sign.

The disease popularly called "SHINGLES" is a variety of herpes. In this affection rather large vesicles form a sort of narrow belt round half of the body. A great deal of pain precedes the appearance of the vesicles, and lasts for weeks or even months after they have disappeared. Shingles is an acute disease, attended with fever and with great general distress. Its causes are very obscure.

The treatment of herpes is chiefly constitutional,—mercurial purgatives, followed by the liquor potassæ, in doses of twenty or thirty drops in water, night and morning. The shingles is treated in the same way; but opiates are often required to soothe the severe pain.

If herpes forms, as it does sometimes, on the generative organs in men or women, it causes considerable irritation, and may be mistaken for some serious disease. Goulard's lotion will usually cause a speedy cure.

RUPIA is a disease in which the vesicles are very large, and are succeeded by dark black adherent crusts. It is often connected with ulceration of the skin, and occurs in persons of broken-down habits. It is best treated by bark, sarsaparilla, and iodine.

IMPETIGO is a disease characterized by small flat pustules, filled with a thick yellow fluid. They rise rapidly, and dry up in a few days, forming thick yellow crusts. Other pustules form beneath the crusts. Occurring on the face in children, this disease sometimes completely encrusts the face like a mask; hence the term "crusta larvalis," or "impetigo larvalis." Eczema and impetigo have very close relations to each other, and often run into each other, so that a mixed disease is formed, which is called "Eczema impetiginoides."

Impetigo is especially apt to occur in spring and summer. It is best treated during its prevalence by great attention to diet and mild aperients. After it is well, as recurrence is frequent, the skin should be kept very clean by constant cold sponging. Immediately an appearance of the eruption is seen, the parts should be covered with collodion.

ECTHYMA is a disease characterized by large pustules, seated on a hard red base. It usually occurs in broken-down constitutions, and is treated with bark, cod-liver oil, and iodine.

I need not describe the disease called ELEPHANTIASIS or LEPROSY, as it is never, or very rarely, seen in this country.

LUPUS, or the Wolf, is a frightful and very intractable disease; it consists in great deposits in the skin of some part of the body—usually of some part of the face. The skin is very hard, and dark red swelling occurs, which afterwards softens down, and an ulcer is formed, which often eats away large portions of the nose or lips, and sometimes even penetrates to the bones. This disease is connected especially with the scrofulous habit, and is most common in youth.

It is to be treated especially by alteratives, especially iodine, and by tonics. The cod-liver oil is very useful. It is often removed by operation, or destroyed by escharotics. The disease requires medical treatment, and is always very difficult of cure.

LEPRA (which is not the ancient Leprosy) and PSORIASIS are very much alike. Both are formed by small red spots, which become covered with scales, but present neither vesicles nor pustules. Lepra often forms rings, the centre of which is free from disease, while the circumference is red and scaly. Psoriasis sometimes affects a large portion of skin, and causes great thickening of it. The scales are quite dry, and rapidly fall off, being as rapidly re-formed by the inflamed skin. Sometimes in psoriasis there are deep fissures and cracks in the skin, which bleed, and give great pain.

Psoriasis sometimes forms on the palms of the hand; and is chiefly characterized by the dry and somewhat thickened skin, from which the cuticle peels off.

Both lepra and psoriasis are to be treated by milky and farinaceous food; mercurial purgatives and alkalies. Baths of warm and cold water are serviceable; as also the wet sheet, which has long been used in medicine, although falsely said to have been introduced by the hydropathists. Ointments of iodide of sulphur, and of lead, if there be no fissures of the skin, are also beneficial. Arsenic is often employed; but without an extremely rigid diet all remedies are useless. Wine, beer, and meat must be abstained from. Vapour baths are often very useful.

PRURIGO is a disease denoted by intense itching, without anything being seen on the skin. Sometimes there are, however, some pale papulæ; hence prurigo is often included among the papular diseases. It is, however, an affection of the nerves. Often patients scratch themselves so much that the parts bleed, and little black points of effused blood are seen.

Occurring in old people (prurigo senilis), this disease is most obstinate, and appears to be often connected with some fault in the action of the kidneys.

Prurigo sometimes affects the fundament, or the parts of generation, and gives rise to intolerable itching and distress. It is best treated by mild aperients, and the acetate of potash, in doses of ten to twenty grains, in an ounce of water, three or four times a-day.

As local applications to allay itching, nothing is so useful as a lotion of about two drachms of dilute prussic acid and four ounces of rose-water. As this lotion is highly poisonous, it must not be used without putting on the bottle a label that it is poisonous, and must not be taken internally.

Urticaria, or Nettle Rash, is a disease almost always caused by some particular article of food, such as shell-fish, &c.; or by some medicine, as ipecacuanha, in certain persons.

There is intense itching of the skin, and large wheals rise rapidly, and as rapidly disappear. It is best treated by the warm bath, aperients, and emetics, if there be nausea. It usually disappears after starving for a day or two. If chronic, and of a rheumatic character, as it sometimes is, it requires medical treatment, and is often intractable.

Acne.—In many persons the little sebaceous pollicles of the skin, especially on the face, shoulders, and neck, become too much filled with contents, and form little swellings, in the centre of each of which is a small black point formed by the secretion, which has become black by exposure to the air. On pressing the little swelling a white substance exudes, which is often called a worm; but it is in fact the sebaceous secretion. In this, however, little animals will form.

The sebaceous glands, thus too much filled, sometimes inflame; they become very red, and form matter in their interior. This is called Acne; or, if it occurs round the hair, as is sometimes the case, as in the beard, for example, it is called Sycosis.

Both acne and sycosis are best treated constitutionally by purgatives and very strict diet. If this does not cure them, the liquor potassæ, thirty drops for an adult, in a wine-glass of water, night and morning, must be used. Rose-water, with one grain of corrosive sublimate in each pint, is very beneficial to bathe the parts.

Diseases affecting chiefly the pigment, or colouring matter of the skin, will be best considered under the section "Hair."

Diseases arising from parasitic plants are very numerous; they form the affections termed ringworm. The plants form especially

round the hairs, which are often also invaded by the growth, and are destroyed. They are little fungi of different species, and are very easily recognised by the microscope.

All these diseases are contagious, because the plants can be transferred from one person to another.

The most common complaint in England is the true Ringworm, or TINEA TONDENS. This disease affects especially the hairy scalp, and forms little rings, from which the hair has fallen off. On looking at this ring, a fine powder can be seen round the remaining roots of the hair. Put under the microscope, this is found to be made up of the spores and thallus of the fungus, with portions of cuticle.

PITYRIASIS is another scaly disease, often classed with lepra and psoriasis. It is common in young persons, appears especially on the chest, and there forms yellow patches and scales.

Both these diseases are easily cured by local measures; the most efficient of which is the sulphurous acid lately recommended by Dr. Jenner (see pages 75 and 88). Formerly ringworm was much dreaded, on account of its obstinacy; but now, its nature being understood, it is easily cured.

ITCH (or SCABIES) is a disease arising from the presence of a little insect called the Acarus, or *Sarcoptes hominis*. It burrows in the skin, and lays eggs there. The irritation causes little papulæ, vesicles, and pustules, and gives rise to a great deal of itching, especially at night, when the insect is most active. The papulæ are most common between the fingers; but they may occur all over the body, except the face.

The disease easily yields to greasy applications; for the animal requires air, which these take from it. The itch may always be cured in a very short time—an hour or two will suffice. Place the patient in a warm bath, and *rub* him down with soft soap and fine sand. I say "rub him down," since the object is to rupture the small and thin vesicles which contain the itch insect. This being done, sulphur ointment is to be freely rubbed in; by which means the acari will be exposed to its lethal influences, and effectually destroyed. This is a certain, but not very elegant procedure; and if circumstances forbid its employment, a solution of the iodide of potassium in rose-water is a good application; also sulphur ointment and baths of sulphur.

CHAPTER XX.

DISEASES OF THE HAIR.

Whether we regard the human hair as useful or as ornamental, the consideration of its diseases becomes of essential importance. As a bad conductor of heat, it materially assists in preserving an equable temperature of the body. In some situations, as a defence against external irritants,—in others, as a trusty watchman, the hair performs an office at once benevolent and wise; while the beauty of luxuriant tresses, and auburn locks, and raven hair, has been a theme of adulation from the time of Solomon to the present day. Well would it be for our countrymen, if, like their continental neighbours, they wore their hirsute honours thick upon them, despising conventionalism, and using nature's gifts in the efficient and appropriate liberality in which they have been pressed upon us.

To those liable to colds and affections of the air-passages, the moustache and beard would form a very efficient protection; while to working men, especially to those whose avocations expose them to the influences of various vapours, or oblige them to live in the midst of a cloud of fine dust—and what workshop is free from it?—the hair upon the lips acts as a very respirator or sieve, preventing the entrance into the lungs of obnoxious particles. But, alas! fashion forbids; and fashion! who does not consult the oracle? Her Pythian voice commands more implicit credence than did the laws of Lycurgus, Solon, or Numa. True! her decrees may be sometimes sphynx-like, and require to be unriddled and modified before they can be adapted to the personal peculiarities of some of her crippled votaries. But at her shrine pain itself is willingly endured, and the natural proportions of the body distorted to comply with her exactions, High and low, rich and poor,—all classes of society,—bow to her authority.

The hair, as other parts of the human economy, is liable to diseases peculiar to itself. Many are treated of by systematic writers; but the majority are mere secondary affections of the skin, and complications of cutaneous diseases of the scalp. I shall in this place confine my remarks to those only which are common in this country; and first of that which results in

Baldness, called technically Alopecia, from a Greek word signifying a fox; that animal being said to be peculiarly liable to the affection. The loss of hair, whether at one spot or in the mass,

constitutes the essential character of the disease, which may occur at any period of life. There may be considerable variety in its form; since there may be only a general thinness of the hair, some patches of baldness, or the whole body may be entirely divested of its natural covering. The change may take place more or less rapidly—in a few days, or be so prolonged that its advances are scarcely perceptible. The skin, also, may present widely different appearances; it may appear perfectly healthy, or it may be pale and furfuraceous—that is, covered with small bran-like scales, or it may be very scurfy, retain or lose its sensibility, or become itchy, hot, and irritable. The hair itself, before falling off, may preserve its healthy character, or otherwise; and all these conditions become of essential importance in rightly understanding the source of the disease, and applying the most appropriate mode of treatment.

The bulb or root of hair consists of an internal vascular pulp, invested with a capsule, from which is produced the outer part or rind of the shaft of the hair, and from the former its inner or central part. The whole bulb is inclosed in a membranous cell, to which, however, it is not attached, but through which vessels and nerves pass to its pulp. Baldness generally proceeds from a diseased condition of the follicles which nourish and support the hair bulbs, depending upon inflammation, ulceration, temporary deficient action, or death from pressure, friction, local irritants, or constitutional derangements.

When the hair follicles are obliterated, no method of treatment will restore them; and here I must earnestly warn my readers against those empirical nostrum mongers who advertise the reproduction of whiskers, moustache, eyebrows, &c., even when "lost by disease of any kind." Nothing will reproduce the follicles; and time and money are both thrown away by those who listen to such seductive promises. A wig is the only remedy for a bald head from such causes; and no amount of bear's grease will clothe a hairless face. As a general principle it may be stated that whatever tends to establish relaxation and want of tone in the hair follicles and bulbs, becomes a cause of baldness; and hence, when these organs are in a state of deficient action, judicious treatment may often remedy the evil. In this case the object in view is to excite the capillary circulation of the scalp, and thereby to promote the vitality of the follicles and bulbs, and enable them to nourish and support the hair. It must be borne in mind that greasy applications are positively injurious, and that cases of their alleged success are extremely

problematical. Our best and most recent authority upon diseases of the hair is Dr. Burgess, who, after enumerating the remedies which have popularly been recommended for the cure of baldness, such as decoctions of wormwood, walnut leaves, horehound, lesser centuary, and mustard seeds; and tinctures—that is, aromatic wines or spirits in various strength, of myrrh, hellebore, capsicum, and cantharides; and embrocations of the oils of lavender, laurel, juniper, camomile, rosemary, thyme, mace, and turpentine; and alcoholic solutions of zinc and copper—remedies which he has found for the most part useless, and seldom to effect the slightest good—goes on to recommend, as most successful, the fumigation of the scalp by means of an ingenious apparatus of his own invention. Dr. Burgess says, in his last edition of "Cazanave upon the Skin," page 252:—

"From a knowledge of the undoubted efficacy produced by the application of vapour, simple or medicated, to the human skin in cases of inveterate disease of that structure on other parts of the body, it occurred to me that similar applications to the scalp, in cases of eruptive disease involving the loss of hair, would also be attended with good results. Messrs. Ferguson, surgical instrument makers to St. Bartholomew's Hospital, made, under my direction, the apparatus described below.

"The vapour apparatus is extremely simple. It consists of a tin jar, about ten inches by four, with a conducting tube, on which is placed a stop-cock, for the purpose of diluting the vapour, or turning it off, and an elastic cap of Vulcanised Indian-rubber, which fits closely to the head, so as to prevent the vapour from escaping. A spirit-lamp, to sublime the appropriate medicinal agent, completes the apparatus for fumigating the scalp. In order to apply the vapour to the face, forehead, or temples, when occasion requires, one or two funnel-shaped tubes of caoutchouc are made to screw on to the metallic conducting pipe, about two inches beyond the stop-cock. Rebellious patches of acne, or of impetigo figurata of the face, may be treated in this manner, without risk of inhaling the vapour.

"The remedies I have chiefly employed for fumigating the scalp in the manner described are iodine, sulphur, mercury, and the gum resins. The hair should be cut close in every instance with the razor-scissors (but the head should never be shaved) before applying the vapour. The application may be continued for twenty minutes or half an hour each time. It will cause an itching or prickling sensation all over the scalp, and the head will then become bedewed with perspiration.

"The great majority of diseases of the skin are constitutional, and those of the scalp are not an exception to the rule. Yet every practitioner is familiar with the difficulty of removing the latter by the unaided influence of constitutional treatment. Porrigo favosa, for example, which is one of the most unsightly, as well as the most inveterate of the eruptions of that region, may be temporarily relieved by tonics and fomentations, and the skin even made to appear clean and healthy; but the *virus* still remains, and consequently the *cure* will be but of short duration.

"In this, as in other inveterate diseases of the scalp, of constitutional origin, the skin, from the force of habit, adapts itself to the morbid condition, which it retains with singular tenacity against all the usual methods of treatment. In all similar cases, the application of vapour, simple or medicated, as the case may require, to the diseased scalp, will be found a very efficient remedy. Where the object is to *alter the vitality of the parts*, this can be done more effectually by the repeated application of stimulating vapour (the skin being previously cleansed with any detergent wash, and the hair cut close), than by the employment of caustic lotions or ointments. Indeed, greasy applications of every kind may be advantageously dispensed with in the treatment of diseases of the scalp. That variety of baldness or loss of hair, which is the result of atony, relaxation, or disordered nutrition of the hair follicles and bulbs, already described, will be materially benefited by the employment of the vapour apparatus."

Gray Hair.—I have now briefly to notice the change in colour of the hair; although it may be hardly correct to call that a disease which for the most part is a concomitant of age, and attributable to natural decay. Still many persons become prematurely gray, and it is not uncommon to find even in young heads that "gray does something mingle."

> "My hair is gray, though not with years;
> Nor grew it white
> In a single night,
> As men's have grown from sudden fear,"

says the Prisoner of Chillon; and from intense emotion in a few hours the hair has become perfectly blanched. Of this we have familiar examples in Sir Thomas More, who became gray during the night preceding his execution; in the case of Queen Mary; and in that of Marie Antoinette in the Temple;

> "For deadly fear can time outgo,
> And blanch at once the hair."

Mr. Erasmus Wilson, however, a well-known authority upon skin diseases, doubts the truth of these examples; and without entering upon the vexed question as to the period which is necessary to effect this change, it is certain that the functions of secretion and absorption are remarkably affected by emotion; although how this occurs is not in this place to be considered. Suffice it then to say, that in the hair cells there is a pigmentary or colouring matter as in the skin itself, and upon the extent of which depends its hue. In the Albino this pigment is altogether absent, and the hair is consequently white; and since in the Albino the constitution is very feeble, we have some clue to the early treatment, and see the necessity of availing ourselves, upon the first appearance of gray hair, of those means which may place the general system in a condition to ward off the effects of premature decay, while they nourish and promote the secretory process. Mr. Erasmus Wilson, in his work on "Healthy Skin," says "there can be no doubt that the production in this climate of a dark pigment is a greater exertion to the economy than one of a lighter kind; and hence, when the power of the nervous system is reduced, the formation of pigment is one of the first actions which suffers. When grayness shows itself in the hair, it is therefore an indication of want of tone in the hair-producing organs, and if this tone can be restored, the hair would cease to change." Mr. Wilson therefore recommends the same means for remedies preventing grayness as he does for promoting the growth of hair; and these are as follows:—I. Vinegar of cantharides, half an ounce; eau-de-Cologne and rose-water of each one ounce. To be mixed and applied.—II. Eau-de-Cologne, two ounces; tincture of cantharides, half an ounce; oil of nutmegs, half a drachm; oil of lavender, ten drops. Mix as before.—III. Merezeon bark and horse-radish root, in small pieces, of each one ounce; boiling distilled vinegar half a pint. This infusion is to stand for a week, and then strained for use. If these applications are found too irritating to the skin, they may be diluted and used less frequently. If they render the hair harsh and dry, a small quantity of pomatum may be applied.

It is needless to say that the permanent restoration of gray hair to its original colour is impossible by any remedial means. Those to whom, from any cause, grayness is unbearable, must use some dye to conceal it; but they must not forget that there is no hair-dye which is not at once detected by its metallic lustre and unnatural hue; and that hoary locks are at all times preferable to ridiculous affectation.

CHAPTER XXI.

SCROFULA.

Scrofula implies a particular constitution not incompatible with the most perfect health during a period of life extended to the utmost longevity of which the human species is susceptible. This seems at first sight a paradox of no further value than to create a momentary surprise. It is true, however, that the scrofulous habit is even conducive to long life; provided it has not in the meantime been concerned in the production of alterations of organs incompatible with the further duration of life. The scrofulous constitution cannot withstand rude shocks applied to it in the shape of the exciting causes of disease; but if, by a succession of fortunate circumstances, it has escaped those rude shocks, or has been placed in circumstances so favourable as to resist their influence, then that constitution, in itself, is not unfavourable to old age. As, however, there are not a few different degrees of the scrofulous constitution, it will readily be imagined that what has been said applies only to those forms of that constitution not marked by great intensity. It is true, however, that many persons marked by the scars of scrofulous sores produced in childhood, reach an extreme old age. The scrofulous habit in this country among children is most commonly indicated by a soft and flaccid state of the solids; fair hair; blue eyes; smooth skin and rosy cheeks, or at least pinky cheeks; a turned upper lip, and generally by a thickened state of the lower part of the nostrils, the forehead being at the same time often protuberant, and the joints and abdomen tumid.

It is to be borne in mind that there is a scrofulous constitution apart from disease and scrofulous diseases; that is, diseases arising in that constitution, and possessing peculiar characters in consequence of the patient being possessed of that constitution. A question arises whether scrofula be strictly a blood disease. It hardly is in the same sense in which scurvy is a blood disease. Scurvy is a disease unquestionably depending on an altered state of the blood—let that altered state of the blood be removed, as readily happens by an improvement of the diet, and the scurvy disappears. So long as no actual disease has arisen in a scrofulous constitution, the blood doubtless is in a healthy state, or at least cannot be said to have deviated from the

most healthy state in which it can exist in that individual's constitution. And though when scrofulous disease has actually arisen, the blood doubtless deviates, in no small measure, from the standard of health, yet there is no reason to conclude that a vitiation of the blood has any greater primary influence in the actual production of the disease, than in the origin of those diseases which are not accounted blood-diseases. I did not place scrofula for this reason among blood-diseases; and the place which it actually holds is convenient, as it belongs hardly less to surgery, of which I am next to speak, than to medicine, strictly so called.

A scrofulous disease may arise at any age. It is sometimes seen even in infants less than a year old, and may even be developed for the first time after fifty. These two cases are however exceptional—for scrofula most frequently originates between the first and second teething—and the greatest number of scrofulous patients are observed to be between five and fifteen years old. In most cases, when scrofula attacks persons of adult age, it will be found that they have previously suffered from the disease in childhood. The disease is on the whole more frequent in the female than in the male sex.

Scrofula commonly makes its appearance after some cause which has served to deteriorate the health. Thus the first symptoms often follow other diseases, whether acute or chronic, which have left the patient enfeebled. Of this description are the eruptive fevers, small-pox, scarlet fever, measles, gastric fevers, hooping-cough, and other protracted chest complaints; or chronic cutaneous eruptions, as those of the eczematous form, or such as fall under what is termed the humid tetter (impetigo) and the dry tetter (psoriasis). When young children are brought from the country to the confinement of a large town, especially in the beginning of winter, scrofula is very apt to affect them in spring. The end of winter and the beginning of spring are particularly remarked as the seasons at which scrofula makes its first onset; and that is, doubtless, it is here the effect of the general impairment of health consequent on continued bad weather and confinement within doors. It is a disease certainly more common in cold humid climates than in dry and warm countries, or in dry and cold countries.

Children brought from a warm climate to a cold and humid air, such as that of Britain in winter, are particularly susceptible to this disease. It is remarked that children from the East Indies often suffer from scrofula in England; and the same thing is even remarked in France of children brought to that country from

Brazil and the warmer parts of South America. Even negroes, coming to Europe from warm latitudes, often suffer severely from scrofula. The causes, then, which excite scrofula are such influences as, by a long-continued operation, impair the general health; these, however, are not sufficient, unless there be that particular disposition given by the scrofulous constitution. This constitution—the marks of which have been already enumerated—is, in general, distinctly hereditary. It does not, indeed, always happen that the parents (or one of them) of a scrofulous child are decidedly scrofulous; but as a child sometimes shows no particular resemblance to either parent in countenance and form, but to some remote ancestor or relative, so a child sometimes, along with such a resemblance, draws the scrofulous habit from a remote source. The scrofulous constitution varies much in degree; so that, to produce the disease, the exciting causes must be applied with an intensity proportionate to the feebleness of the predisposition.

The simplest form of scrofula is a chronic swelling and slow ulceration of the glands of the neck. Such swellings very commonly appear at the end of winter, and do not heal up till the approach of summer—somewhat more than a year from their first breaking out; while they also show a very peculiar character when cut into and carefully examined. In the first state of enlargement the glands present, when cut into, a pale flesh colour, and an uniform soft fleshy texture. As the disease proceeds, the texture is firmer and the colour paler. In a more advanced stage, portions have lost the flesh-colour, having become somewhat transparent, with a texture approaching to that of soft cartilage. During the course of these changes, there arises in other parts the first appearance of the opaque-white structure, the last step of alteration, which seems to be exactly analogous, in all respects, to the white tubercle of the lungs in pulmonary consumption. This opaque-white or ash-coloured tubercular matter becomes gradually softened, until it passes into the soft cheesy matter, or ill-conditioned suppuration, so well known in scrofulous diseases. In short, in tubercles of the lungs the essential condition of the presence of pulmonary consumption consists in a deposition on the mucous membrane of the air-cells, of exactly the same kind as that which occurs in the lymphatic glands of the neck in the commonest form of scrofula.

Other lymphatic glands elsewhere in the body, though less frequently, are subject to like changes in scrofula. Lymphatic glands become so affected in the axilla or arm-pit, in the groin, about the

breast, and in the course of the lymphatic vessels of the inferior extremities.

The scrofulous abscesses which arise in deep-seated parts probably often owe their origin to a primary scrofulous affection of the lymphatic glands in these situations.

The glands of the mesentery have in all respects a like structure with the glands of the neck. These are subject to scrofulous degeneration, constituting a disease of the most serious character. This disease is termed tabes mesenterica, or mesenteric consumption. These glands then enlarge and become charged with tubercular matter, but they seldom suppurate. Along with this disease of the glands there is scrofulous disease and ulceration of the mucous follicles, or muciparous glands of the intestines, so that the disease almost uniformly proves fatal, owing to the defect in the supply of nourishment from the intestinal tube. In rare cases, as in tubercles of the lungs, when but a small number of the mesenteric glands are affected, and a chalky deposit takes places into these, recovery follows, as is sometimes proved by the patient dying, at a later period of life, of some other disease (see page 108).

The diseases hitherto referred to are chiefly diseases of childhood; the lymphatic glands, particularly those of the neck and of the mesentery, being at that age by far the most frequent seat of scrofulous or tubercular deposit. But after puberty, and in early adult age, the summit of the lungs, particularly on the left side, is, beyond all comparison, the place most liable to scrofulous or tubercular deposit. Scrofulous deposits on the larynx and windpipe often take place in connection with the like disease of the lungs. Scrofulous deposits on the mucous membrane of the alimentary canal occur very uniformly in connection with pulmonary consumption, as well as with tabes mesenterica, or mesenteric consumption. The disease occurs in the small intestines, both in the solitary and in the aggregated follicles or glands. The same morbid change takes place also in the solitary glands of the cæcum, or upper extremity of the great intestine. Scrofulous deposits are not so common in the liver of grown persons —in children they are not unfrequently met with in connection with ulceration of the bowels. In the spleen of children they are not uncommon. On the surface of the peritoneum they are often met with.

In the nervous system scrofulous deposit also occurs. It is met with in the brain oftener than in the spinal marrow. It is, perhaps, uniformly connected with water of the head in children.

Scrofulous deposits are rare in the muscular substance; yet it is not unknown. In the heart it is particularly rare. In adult age, tubercles are seldom confined to one organ.

Scrofulous deposit is not unfrequent in bones, particularly in the bodies of the vertebral bones of the spine, and in the spongy ends of the long bones. The connection of scrofula with diseases of the bones and joints renders it a diseased action not less important in surgery than in medicine.

Scrofula affecting the glands of the neck often disappears almost spontaneously after a time. Hence it appears that there is nothing malignant in the nature of scrofula. It destroys life only when it attacks so large an extent of the solids as to create a general febrile irritation of the hectic character, under which the powers of the system sink, or when it attacks organs essential to life, so that the continuance of existence is incompatible with the interruption of their function. Even in slight cases of scrofula, some degree of fever, approaching to the hectic character, arises; and in mesenteric consumption and pulmonary consumption hectic fever is developed in its most marked character.

Whatever be the seat of the scrofulous or tubercular deposit, if the progress of the disease can be checked while it is still little advanced, and the functions of nutrition can be maintained in a tolerable degree of energy, there is no reason why the disease may not disappear. As respects simple scrofula of the lymphatic glands of the neck, the almost spontaneous cure, as summer weather advances, is seen, in many instances, every season. But in the case of the severer forms, particularly mesenteric and pulmonary consumption, there is indeed too much ground for the common persuasion that these are incurable. Strong, however, as is the evidence of the incurability of these diseases, the belief should not be implicitly adopted. For it is plain that cases of this kind are only incurable when they have proceeded so far as to render it impossible for the system to rectify itself, owing to the extent to which nutrition has been interfered with. No case of scrofula, or scrofulous deposit, should be despaired of, so long as the system shows a tendency to rally under the application of a proper system of treatment, diet, and regimen. There is, however, no specific remedy against scrofula. We must describe the disease as being susceptible of a spontaneous cure when the nutritive functions can be brought back to a state of healthy activity.

Hence the hygienic means stand first among the remedies; and the principal of these hygienic means is a pure and dry air. This

hygienic agent is one of the most efficacious, not only in scrofula, but in many other chronic maladies. Its efficacy, however, is very much increased if it can be combined with some share of bodily exertion. Of scrofulous persons, those are most sure of a speedy cure who are able to bear some kind of country exercise in the open air; and one of the great uses of a change of climate in winter is that even the delicate may not be debarred from daily exercise.

The diet deserves the utmost attention of the medical adviser. There can be no doubt that, in diseases of the kind under consideration, a too meagre diet has often been recommended in the fear of aggravating inflammation. But the inflammation connected with scrofulous deposit is of a slow character, and is often benefited rather than aggravated by a somewhat stimulant regimen. In general, the diet should be of the most nutritious character, care being taken, however, that it is not pushed beyond what the digestive organs can bear at the time without irritation. If the patient has cultivated a fastidious appetite, it will very often happen that the stomach rejects any change of diet or any increase in its quantity. We must proceed, therefore, by cautious steps, and endeavour to habituate the stomach to a somewhat greater exertion. The point to be aimed at is that the patient shall be brought to take daily such a quantity of animal and vegetable food as experience has proved to be necessary for the full nutrition of the living system.

To promote the appetite and digestion, various tonic medicines are serviceable. Alkaline remedies, such as the bicarbonate of potassa and the bicarbonate of soda, in doses of from ten to twenty grains, several times a-day. To these may be joined various preparations of the bitter tonics, as the infusion of gentian to the extent of one or two ounces three times a-day. The sulphate of quinine may soon be substituted for this treatment or alternated with it, the dose for an adult being two or three grains several times a-day. In many cases preparations of iron are indicated by the languid state of the pulse and circulating system in general. A preparation of late introduced is the citrate of iron and quinine, which has frequently the very best effects; the dose is two or three grains three times a-day. This salt is freely soluble in water.

The chloride of calcium, commonly called the muriate of lime, and the chloride of barium, commonly called the muriate of baryta, had at one time a reputation as tonic remedies in scrofulous diseases. These salts seem sometimes to be of use, but both are dangerous,

factories; hot rooms and an over delicate system of training; application to study without the relaxation and amusements to the age of youth.

When nothing has occurred beyond the slight distu.. health above described as commonly ushering in the app the uterine discharge, little treatment is required farther t attention to the stomach and bowels, the warm bath, or hip-bath, and a little care in the regimen adopted. A te of calcined magnesia, or fifteen grains of bicarbonate of s some aromatic water, such as cinnamon or pimento water. as occasion requires, will usually correct the stomach When aperient medicine is necessary, some of the prepa. aloes answer well, such as one or two ounces of the d aloes, or a similar quantity of the wine of aloes. If the habitually confined, even half an ounce of the wine of aloes, during a short course, will often restore their tone and benefit the health. The warm bath and the warm hip-b for constant use, but only for a few days before the time effort to produce the secretion is expected. As to regim supposed hardly requires any special care in respect to me it does require that all unusual exertions, whether of n should be suspended; and in particular, that late hours anxiety should be carefully avoided.

If the symptoms amount to what was represent indicating the actual state of chlorosis, the patient shou without delay under the care of a judicious medical m not a disease to be treated by domestic remedies, exce slightest forms; but the great objection to the tre severe case being undertaken by a mother is that symptoms of chlorosis often conceal some very serious too often a fatal disease. It is quite true that the p called in however early, may not find professional skil to prevent the fatal termination of the disease, whi concealed under the mask of chlorosis; but surely he a mother, in such a case, a fearful responsibility, if to her daughter what it was not in her own power t the chance of preservation which the dispensations permit the art of medicine to supply.

The principal remedy in chlorosis is steel in its The tincture of the muriate of iron, or, as it is n the sesquichloride of iron, is a good form; it may

..., when administered, the ... benefit of the change perhaps ...ful breezes of the sea-coast. ...the remedies. From this sketch ... scrofulous diseases are to be ... in the circumstances of each ...r a very great diversity in the

XXII.

...SSES.

...mains of Surgery; and first I ...ion of the processes of repair ... or re-unite parts injured and ...y one may be able to act the ...s of emergency; save many ... such knowledge of what is ...n from interfering with the ... How often are the best di... ...ness of ignorant friends and ... which seem too tight; they ...ing wounds; and opening deep ...ver could make its way out of ...thing far and wide; and prevent ...pt them with any reasonable ... of this tying up the surgeon's ... nay thousands of persons are ...dens to themselves and their ...ing heavy losses to one party or ...anderings are engendered. To ..., in a position to appreciate ... his patient will be a boon to

...ly peopled districts, remote from ...pidly increasing settlements, it is ... clear elementary knowledge of

except in very small doses. They must be administered by a medical man. If too large a dose of either should be taken by accident, the chemical antidote is sulphate of soda, common Glauber salts, or the sulphate of magnesia, common Epsom salts.

But no chemical remedy of late years has obtained so great a reputation in scrofulous diseases as iodine. Simple iodine in the form of tincture, the iodide of potassium, commonly called the hydriodate of potassa, and the iodide of iron, are among the best forms. The dose of these preparations requires to be adjusted with some care. It is an essential rule to begin with a very small dose, and to augment it gradually up to that quantity which the constitution can easily bear.

It is hardly necessary to notice the many remedies which at different times have gained a reputation for the cure of scrofula. It is easy to understand that in a disease, many hundred cases of which, generally of at least more than one year's standing, suddenly get well spontaneously every year on the approach of summer weather, numerous drugs and practices will annually gain a credit as remedies, to which they have no good title. Of this description, probably, is the reputation gained of late years in France by walnut tree leaves. Such also was the origin of the famed efficacy of the royal touch, practised annually in the beginning of summer by the Sovereigns of England from Edward the Confessor down to Queen Anne, and by the Kings of France down to Louis the Sixteenth. This practice is the origin of the popular name of scrofula, "King's evil."

One remedy, however, still remains to be mentioned, which well deserves the reputation it has obtained, namely, the cod liver oil. It is not easy to imagine how this oil operates, so as to prove a remedy in scrofula. But certain it is that nothing is more surprising than the improvement made on the health of scrofulous persons under its use. Its effect is probably connected with the improvement of the functions of assimilation or those functions concerned in the transmutation of aliment into blood. But in whatever way it operates, advantage should be taken of the improvement made on the health as soon as that appears, to put the patient under exercise out of doors and a fuller allowance of food suited to the new vigour acquired by the digestive organs.

Sea-water as a purgative has a reputation in the cure of scrofula. It is useful as an aperient—but must not be carried too far. It has the reputation of weakening less than most purgatives; that effect,

however, admits of explanation, since, when administered, the patients are generally enjoying the benefit of the change perhaps from a crowded town to the healthful breezes of the sea-coast. Sea-bathing also stands high among the remedies. From this sketch it will appear on what principles scrofulous diseases are to be managed; while the great variety in the circumstances of each individual patient will afford scope for a very great diversity in the details of the treatment.

CHAPTER XXII.

HEALING PROCESSES.

I now enter upon the legitimate domains of Surgery; and first I propose to give the reader a clear idea of the processes of repair which nature calls into action to restore or re-unite parts injured and torn by accident or design. Thus every one may be able to act the part of surgeon in the first moments of emergency; save many a life now lost by delay; and possess such knowledge of what is often necessary as will restrain him from interfering with the judicious efforts of the surgeon. How often are the best directed labours defeated by the officiousness of ignorant friends and parents. They will undo bandages which seem too tight; they will object to sewing up disfiguring wounds; and opening deep abscesses in parts where the matter never could make its way out of the body, without destroying everything far and wide; and prevent operations until it is too late to attempt them with any reasonable hope of success. The consequences of this tying up the surgeon's hands are that every year hundreds, nay thousands of persons are crippled for life, rendering them burdens to themselves and their friends; lawsuits are instituted, causing heavy losses to one party or the other, and heartburnings and slanderings are engendered. To place the bulk of the community, then, in a position to appreciate rightly the true duty of the surgeon to his patient will be a boon to both.

Among those who live in thinly peopled districts, remote from surgical aid, and especially in our rapidly increasing settlements, it is essential that all should possess a clear elementary knowledge of

surgery; for injuries frequently require such prompt assistance that life may be lost long before any surgeon can reach the spot—a catastrophe which might be easily obviated, if any bystander or neighbour possessed the slightest smattering of true surgical knowledge.

The great business of surgery is to heal wounds or breaches of continuity, seen or hidden; comprising under the name of wounds, not only any injury in which the skin is cut or torn, but those in which a deeply hidden part, as a bone, is broken, as well as ulcerations of internal parts, as of the throat; in short, whenever a part is broken or destroyed, it must be regarded as a wound, which it is the surgeon's function to heal. True, he has occasionally to interfere with what are not exactly wounds, as in removing stone from the bladder, or reducing a rupture; but as a comprehensive definition, it would be difficult to substitute any other short description of what is included under the term surgery.

The most numerous class of cases which can be fairly brought under the range of what may justly be called household surgery is that of simple injuries, such as wounds, burns, and scalds. Injuries of this kind form a distinct branch of surgery, because they are often more formidable in the first instance than those which arise from constitutional causes, as ulcers; although after the first danger has passed away they are much more easily dealt with. I shall therefore proceed first of all to describe the nature and treatment of accidents, to which a sketch of the process of repair which is set in motion as soon as any injury is inflicted will form the most appropriate introduction.

When we consider that man, even in the most highly civilized condition, is perpetually exposed to accidents of every description, from causes over which he has at times no control, it is obvious that some power must exist, inherent in the system, and ever ready to repair injury. Without some such provision as this men would perish more rapidly than they could be replaced; or else an injury could never be repaired, and the only termination to the sufferings occasioned by a wound, would be the end of life itself. Fortunately, however, for our own welfare and happiness, every animated being is endowed with this power of repair, and so beautifully and harmoniously is its office adapted to the necessities of the case, that the most serious violence often inflicts no lasting injury, and the healing of the most destructive lesion becomes a natural process, and is effected from first to last without interfering with those functions

which could not be safely interrupted. The action of repair is but an extension and continuance of the same process which first constructed the frame, and then served to maintain it in a healthy state.

Vast as our frame is, it is made up of cells and fibres of microscopic minuteness, possessed of individual vitality, each atom a structure in itself. Varied as its different parts appear, they are formed by the same process and out of the same primary elements—the hardest bone and the most delicate skin, the insensible nail and the tender and transcendently beautiful organ of vision, are all mere modifications of one common form of growth.

To conduct serious injuries to a successful termination is the proper business of the surgeon. Nevertheless his task in such cases is not so much to set on foot a healing process, as to render available the natural tendencies implanted in the body for that purpose, by removing, as far as possible, all those obstacles which on many occasions interfere with the efforts of nature. It is a maxim on which the whole success of modern surgery rests—that there is in every frame an inherent power to repair injuries; and that all the surgeon's remedies and applications are only for the purpose of enabling that healing tendency to be developed without impediment. The great variety of circumstances under which injuries arise, and the diversities in the constitution of individuals, including their various states of more or less health at the time, thus afford full scope for the exercise of surgical skill. It would often be in the highest degree dangerous for a person uninstructed in surgery to attempt to perform the office of surgeon; but there is no reason why he, like every one else, should not fully understand the real nature of the healing process implanted in the living system, and the limits within which it is in the power of art to aid it.

The least complicated kind of injury to which the human body is subject is a clean cut, or what is called an incised wound, and this name it still retains, however deep it may penetrate into the soft parts, and however important the structures it divides, provided always that the cut be made with a sharp instrument, for when this is blunt the wound loses its simplicity of character. Thus, that made with the surgeon's knife, however large, owing to the fineness of the edge, still comes under the head of an incised wound, though it may have divided the whole thickness of the limb, as of the thigh down to the bone. If the same kind of wound be made with the sudden blow of a sabre, it will be equally an incised wound, provided the

sabre be sharp in its edge like the surgeon's knife; but this it never is, and hence, though the one may at first present the same form as the other, the parts in the case of the sabre wound are not only divided, but also in some degree contused, the deviation from the simple character of an incised wound being great in proportion to the bluntness of the sabre.

When an instrument without any cutting edge, or a blunt missile, strikes a soft part with great force and rapidity, it may produce at first what appears to be a simple cut; but such a wound will be a perfect example of what is termed in surgery a contused wound. Every wound comes under one of these two heads.

The reparative process which now ensues has been described as a process of nutrition. In surgery the simplest form of this process is when a cut, made by a very sharp instrument like a razor, is closed soon after it is inflicted. When the divided surfaces are placed exactly in contact, and retained in this position, union takes place with surprising rapidity. This is an instance of what surgeons call "union by the first intention." It is even supposed that small wounds of this kind unite without the interposition of any substance deposited from the blood. In this case, then, new vessels must stretch from either side across the divided space, so that such part of the circulation as was interrupted by the cut is again restored. This kind of repair, however, takes place on so limited a scale as to be of small importance. In all cases where the wound made by a clean sharp-cutting instrument is of a considerable size, a deposit of coagulable lymph is known to take place between the divided surfaces, and this coagulable lymph quickly becomes developed into a fibro-cellular tissue, while the situation of the cut remains marked at the surface by a thin line of cicatrix or scar.

It is essential to the healing of wounds by the first intention, that the two cut surfaces should be brought into apposition. At the same time it is only in very small wounds that this is to be done at once, and without some precaution. For if the lips of a deep incised wound be brought into exact contact, and retained in union so as to prevent the escape of any fluid which may collect beneath, the object of the surgeon will be frustrated by the effused fluid separating the cut surfaces in the deeper parts of the wound. It has been common to draw together the edges of incised wounds by means of adhesive straps, as they are termed, that is, narrow bands of adhesive plaster; but if these be applied immediately after such an injury, and so as to cover the entire outer opening of the wound,

the effect just referred to will be very apt to occur. This has led some surgeons to resort to the old method of applying stitches, since their effect is exerted at a considerable depth, while they oppose no obstacle to the exit of fluid. Some difference of opinion exists among surgeons as to the propriety of stitches; but there can be no difference of opinion as to the necessity of placing the deeper parts of the wound in as close contact as the outer edges, and of adopting such measures as will secure the free exit of any quantity of fluid which may collect in the interior of the wound.

The proof that union has taken place in such a wound by the first intention is, that it heals up without the subsequent discharge of any purulent matter. It will often happen in cases of deep incised wounds, that though healing takes place chiefly by the first intention, yet that some slight degree of suppuration does occur. Here then, strictly speaking, the process is a mixed process; but it is commonly said that such a wound has healed by the first intention, when only a very slight formation of matter has occurred.

Sometimes the healing of wounds by scabbing is placed under a separate head. In this form of repair the raw surface of a wound or abrasion acquires a covering of dried blood, under which a thin layer of coagulable lymph being poured forth quickly, passes into fibro-cellular tissue, and then becomes covered with cuticle. After this stage is completed the scab drops off. This mode of healing is especially observed in the lower animals; for in them a wound of any kind is much less liable to be followed by the formation of pus than in man.

Healing "by the second intention," in the language of surgery, is healing by the production of granulations from which pus is secreted, as ensues in the repair of an ulcerous abrasion, or after a severe contused wound. Many erroneous ideas have existed on the subject of their production. For example, it has been supposed that a deep ulcer is filled up by successive tiers of granulations, until the new surface reaches the adjacent skin, when what is called cicatrization takes place. It has hence been concluded that there is an actual regeneration of the injured parts; this however is not the case, notwithstanding that it is well known that in lobsters and some other such animals even the limbs are regenerated after they have been broken off. It must be remembered, however, that the toes of lobster or crab, though they serve the purpose of a skeleton, are in reality merely hardened integument or skin. In the case of an open wound, however, only one layer of granulations is formed on

the surface; this layer is formed from an infusion of lymph, a thin clear fluid, which becomes organized into a granular pellicle. In a healthy sore the quantity of this organized substance is very small. On some occasions, however, the granulations rise above the level of the surrounding parts, forming what is popularly called proud flesh; this enlargement or elevation arises from their distension with serous fluid, giving them an unhealthy character. Healthy granulations, on the contrary, are small, firm, and ruddy; and if an opportunity occur of examining them by dissection, they will be found to form only a thin layer. How then, it will be asked, does the wound become filled up? In this way:—the granular surface serves the purpose of a temporary integument or skin; beneath this an effusion takes place, which in some degree assists in raising the granulations to the level of the skin; but the chief agent in bringing them to this level is the absorption and diminution of the surrounding tissues, and particularly that of fat. As soon as both attain a common level, the granulations themselves undergo a process of absorption, by means of which the area of the wound is gradually contracted; the wound is finally closed by the granular pellicle, and the cellular substance below it indurated by the effusion of coagulable lymph into its interstices. After the healing of such a sore there is a depression marking its former seat, and this depression seems to arise from the adjacent parts recovering from the emaciation which has taken place during the process by which the surface of the sore and that of the adjacent skin are brought to the same level. The firmer the skin is on any part of the body, the larger is the cicatrix left by a healed wound: where the integuments are most lax the mark of the sore is smallest.

Thus the reader may see that the powers of nature are quite adequate in a healthy frame to repair extremely serious injuries, and that it is absolutely necessary not to interfere with the conservative action of these powers. Hence the principle which must always guide the surgeon is to give them fair play, by insisting on rest for the injured part, however much it may interfere with other duties; and this point can only be gained, in many instances, by giving the part that position in which the muscles are duly relaxed. He may also learn from this, that the use of irritating applications, such as liniments, ointments, &c., to which people are so prone to resort after sprains, bruises, or wounds, is fraught with danger; in fact, a directly opposite treatment, such as the careful exclusion of air, and the application of a piece of lint wetted with simple water, and

secured by a bandage, are, in most cases, combined with rest, all that is necessary.

The power of recently divided parts to cohere is amply exemplified by the instances which have been recorded, where a finger or thumb, after being completely severed from the hand, has reunited, on being properly applied and fixed to the hand; some part of the successful result is, however, due to the fact, that the bleeding was completely stopped before union was attempted.

It seems almost an universal law, that in the higher animals, such as man, no structure once destroyed by a wound can ever be completely replaced; complete union may take place after simple division, but an absolute loss of substance is rarely restored. However firm the newly-formed tissues may appear, they are endowed with much less vital power than those they serve to replace, and they are extremely prone to give way whenever the health is seriously affected. Thus it has happened, that during attacks of that frightful malady scurvy, fractures which had long healed have again become disunited; the structure which united the broken portions of bone being absorbed, or at least losing that integral part which gave it the necessary firmness. Wounds also have re-opened,—a fact which teaches us, in the most forcible language, how desirable it is in every case to save as much of the original structures as possible.

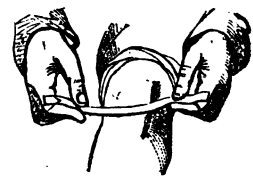
Having thus endeavoured to give the reader a clear idea of the process of repair, and a general view of the functions of surgery, I shall now proceed to lay before him practical rules for applying these principles, commencing with the simplest form—the surgical treatment of injuries.

CHAPTER XXIII.

WOUNDS AND ULCERS.

Clean wounds or cuts, as they are called, will, as I have said, generally unite by a very simple process, all that is necessary being to maintain the divided surfaces in contact. When only skin is cut through, adhesive plaster may be used; but the bleeding should first of all be thoroughly stopped by means of cold water and gentle pressure. When this is done, the part should be carefully dried; and the

straps of plaster being warmed, taking care that the plaster is not blistered by the heat, they are put on at a considerable distance from the wound, and then drawn at right angles across it, as in the annexed wood-cut.



A very simple method of treating recent wounds is by what is termed the water dressing. A bit of lint rather larger than the wound is moistened simply with water and laid upon it, and over this is placed a piece of water-proof cloth or oiled silk, large enough to extend somewhat beyond the edges of the lint. Care must be taken that none of the threads of the lint pass out beyond the edges of the cloth or silk. The parts being brought properly in contact, the dressing is maintained in its place by means of a proper bandage.

But if the wound be very deep or gape considerably, stitches are undoubtedly the best means of securing complete union. It is true they are somewhat painful, but how much subsequent pain—how much deformity do they not ward off! A wound may often be healed in a week or ten days by stitches, which would require three or four weeks if dressed with plaster. On the face and neck, especially in the female sex, it is absolutely necessary to avoid them if possible; and the many cuts inflicted on the delicate skin of these parts may be advantageously treated with collodion. As in the former case, the bleeding should be stopped, and the edges of the wound brought into close contact; the collodion is then applied with a small brush, which is passed once slowly over the wound; the parts should be retained in contact by the fingers till the collodion has set, which takes place very rapidly, and the brush should only be passed once over, lest the contraction of the second layer tear off the first.

In more serious cases, where large blood-vessels are injured, it becomes of the first consequence to stop the bleeding immediately. If an artery be injured, the blood will spout out sometimes in jets, sometimes in a bright red stream, which is often thrown to a considerable distance. The first thing to do is to place the finger on the side of the wound nearest the heart, and make pressure there; thus, if the wound were on the arm, the finger should be pressed, as in the following diagram, on the side towards the shoulder; if on the hand, on the side nearest the arm, not towards the fingers; if on the neck or head, pressure should as a general rule be made below the wound;

if on the trunk, below the heart; or in the lower limbs, it must be above the wound. In such cases it has been recommended that a bandage or handkerchief should be tied round the limb, and twisted tight with a stick; but mortification might arise from such rough treatment, and if any of the large vessels of the neck were injured, life might be lost before it could be applied, or the patient might be almost strangled in effecting the necessary pressure. When the mouth of the bleeding vessel can be seen, it must be secured with the forceps, and held while another person ties it.



When the bleeding takes place from a vein, it flows more regularly and softly, and the stream is darker coloured than that of an artery. The proper way to stop it is to press on the side furthest from the heart.

Bleeding from the Nose, from whatever cause, may generally be stopped by putting a tent into the nostrils. If this does not do, apply a cold lotion to the forehead; raise the head, and place both arms over the head, so that it will rest on both hands; dip the tent, slightly moistened, into some powdered gum arabic, and plug the nostrils again; or dip the tent into equal parts of powdered gum arabic and alum, and plug the nose. If the bowels are confined, take a purgative.

In all cases of bleeding, plenty of air should be let into the room at any hazard, or the patient should even be taken out into the open air; cold water should be poured over the surface, or dashed on it, for the bleeding must be stopped. Surgeons are often compelled to enlarge wounds, in order to get at a bleeding vessel, or even to use the actual

cautery—the surgical term for a red-hot iron—when they cannot reach it with the forceps and ligature.

When bleeding takes place into the interior of the body, as into the chest or abdomen, the patient soon begins to grow pale and faint; the face assumes a waxy, death-like appearance, and cold perspirations begin to break out, indicating a highly dangerous condition. Fainting, however, is often beneficial, inasmuch as it tends to arrest the bleeding. Here, even more than in wounds of the surface, cold air, dashing cold water over the surface near the wound, and cold drinks, are called for; and one of the greatest men who ever practised surgery in Britain says of this class of wounds, "you must appear cruel to be kind; water must be food and drink; he must be kept cold and chilly, and far better lie by a dike side, than to have all the comforts and attentions of his home and sorrowing friends."

Wounds of the internal organs often prove fatal from various accidental circumstances. Those of the abdomen are particularly dangerous, because the contents of the bowels are apt to escape and to destroy life, either by the immediate irritation or the subsequent inflammation they produce. Those of the chest are equally serious, as they, if deep, thus rarely fail to interfere either with the respiration or the circulation of the blood.

There is a very prevalent belief that it is absolutely necessary that the patient should be purged, or at least subjected to some form of medical treatment; but in most cases this is uncalled for, if not injurious. If the bowels be constipated and the tongue foul, a gentle aperient may be given, but otherwise the less medicine the better, so long as no untoward symptoms set in; the surgeon's attendance being an item of far more importance than his medicine. Nor is starvation necessary. A person confined to bed or the couch requires less food and stimulants than when taking active exercise; but there is no necessity for rushing into the opposite extreme.

In every form of wound, unnecessary meddling,—looking to see how it is going on, a wish to be doing something,—should be guarded against. All processes of repair require a certain time, and any attempt to shorten the due period will only have the effect of retarding the cure. So long as a wound is not becoming more hot and painful, and no alarming constitutional symptoms set in, it should not be disturbed, unless the dressings become saturated with moisture of any kind. Blood is nature's dressing, and the best.

Contused Wounds.—When an instrument without any edge, as a blunt missile, strikes any part of the body, it inflicts a contusion, or

a contused or bruised wound; such are gunshot wounds. The difficulties in the treatment of this, the most formidable class, arise from the contusion caused by the rapid passage of the ball through the part it traverses, from the tearing of the vessels, and breaking of bones, which are occasionally shattered into fragments. When the ball strikes with less velocity, as when it is spent, it is often flattened and rebounds, or if it hits a sharp edge of bone it may break in two.

Fortunately we seldom see gunshot wounds, but cases of contused wounds from other causes are common enough. Among contused wounds we rank those caused by the blow of a stone, stick, hammer, poker, or policeman's baton, and those from falls.

This form of wound is more slow in healing, and apt to leave a larger scar than the simple wounds; the principles, however, on which such injuries require to be treated are essentially the same—rest; bringing the sides of the wound as much in contact or apposition as we can; strict attention to cleanliness; the avoidance of all causes of irritation; and the removal of any which exist.

All foreign bodies—such as balls, gravel, pieces of cloth—must, if they can be reached, be removed. This is best done by pouring water over gravel; while balls and pieces of cloth generally require to be withdrawn by the fingers or forceps. No irritating applications should be thought of; plenty of water is the best dressing, though when inflammation sets in, lotions containing sugar of lead may be used. A single fold of linen rag, and not a mass of cloths, is the best medium for applying them. If severe pain arise, opium may be given in doses of a grain or two; and during the first moments of agitation after the accident, a little compound spirit of lavender or eau-de-luce (aromatic spirit of ammonia) should be administered.



Great relief is often experienced by laying a cloth upon the part, and suspending a basin over it filled with a cold lotion, or even water, as in the annexed cut. Place a piece of cotton in the basin, so that it

shall allow the lotion to drop on the cloth, and thus keep it always wet.

A wound of this kind generally heals by the second intention, the nature and process of which I have already explained. The granulations, or small red cones dotting the surface, should be small, firm, and moderately red. When they show a tendency to become flattened, or pale and flabby, stimulating dressings, as balsam of Peru, or basilicon ointment, may be requisite. If they are bright red, and there is much pain, or if the discharge be very thin, sedatives may be given; opium at night, in half grain or grain doses, is perhaps the best. When, on the contrary, they rise above the surface, as is very apt to ensue in children after burns, blisters, scalds, &c., they require to be repressed with escharotics, as a weak solution of sulphate of copper, or to be dressed with dry lint.

Ulcers. — On account of the extreme similarity of treatment required in many instances for this class of wounds, and that generally adopted for ulcers, it will be most convenient to treat of these in connection with the present subject. In fact, many of these wounds are converted into ulcers by the death of the part, or the absorption of its edges during the process of repair.

But while the local treatment of an ulcer—that is, the treatment applied directly to it—is in most of its features exactly that of a contused wound, the constitutional treatment has to be the reverse; as an ulcer arises from a disordered state of the health, or constitutional tendency to disease. The bite of a flea, a scratch with the nail, or a slight bruise, will in some persons, especially if they have lived freely or followed unhealthy employments, be followed by an ulcer of a very serious, and, if neglected, of a fatal character.

In addition to the means I have already mentioned, we possess a valuable remedy in irrigation, or the watering process; this is effected by the continual dripping of water upon the ulcer, and may be employed in any form of ulcer except that where proud flesh forms. When it can be procured, the best plan is to resort to the proper apparatus, or irrigator; but if not, a skein of lamp cotton or worsted may be substituted. One end of this is laid in a jug of water, while the other is suspended by means of a rod over the ulcer; oil-cloth may be placed below to catch the water which has flowed over the ulcer, and which may be easily guided from the oil-cloth to a tub placed on the floor. Another plan is, to fill a large bottle with water; it is then corked, and a hole bored through the cork, and the water is poured out of this hole over the ulcer: it should be held at a con-

siderable height above the spot the water falls on. Treated in this way, ulcers will often heal with great rapidity; army surgeons have even succeeded in curing the wound and preserving a useful hand, when a soldier has shot himself through the hand in order to get discharged,—thus effectually frustrating his intentions.

When an ulcer is seated in the leg, the foot should always, during rest, be raised night and day to a level with the hip; and if the parts around the ulcer look much inflamed, it should be raised even higher. When the edges of an ulcer are very thick and callous, it often becomes necessary to pare them down; in other cases, the surgeon is compelled to make a tolerably deep cut on each side, to divide the firm fascia or membrane, the tenseness of which does not allow the edges of the ulcer to approach each other sufficiently. Sometimes galvanism is resorted to with the best effects in pale, painless ulcers, and occasionally nothing but change of air will do any good.

When a person receives a severe contusion of the leg or foot, or breaks his leg, or is unable from some cause to bear the pressure of the bed-clothes, it is advisable to know how to keep them from hurting the leg. This may be done by bending up a fire-guard; but the best way is to make a cradle, as it is called, such as is figured in the wood-cut. This is done by getting three pieces of wood and three pieces of iron-wire, and passing the wire through the wood. This can be made to any height, and is very useful in all cases where pressure cannot be borne.



The constitutional treatment will require to be suited to the varieties of the case. Persons of a full, plethoric habit and sluggish liver are benefited by aperients or purgatives containing a little blue pill, aided by saline medicines, such as nitrate of potass, seidlitz powders, &c. The shattered, irritable frame may require opium and quinine, with plain animal food well cooked, and a glass of sherry or Madeira to dinner. When there is great pain, free use may be made of sedatives. In some pallid persons the use of steel is highly beneficial.

CHAPTER XXIV.

FRACTURES.

Fractures form a most important branch of surgery; and every member of the community ought to know, every patient and friend should be also warned, that it is in some complicated cases impossible to prevent deformity or loss of use in the limb; that under the very best treatment such unfavourable symptoms may set in as to demand amputation; and, finally, that death may ensue.

As an example of the reparative power of the living body, there is nothing so remarkable as the provision made for the reunion of broken bones. In ordinary cases a bone is broken quite through, either straight across or in an oblique direction. If the opposite broken surfaces are placed in apposition, and retained there by proper means, union finally takes place. The substance by which the broken ends are cemented together is termed callus by surgeons, and much discussion has arisen as to the mode of its production, and the various modifications which it undergoes. Many writers call that callus which forms first "provisional;" that which is destined to last, "definitive."

During the first ten days blood is poured forth around the ends of the fracture, between those ends, and even into its central cavity. The periosteum, or skin of the bone, grows red, swollen, and softened, and a reddish fluid is poured out between it and the bone, the ends of which no longer exhibit a fibrous appearance. The tube in the centre of the bone is gradually obliterated by the inflammation and swelling of the membrane lining it (the medullary membrane); the medulla itself (the marrow) acquires a greater consistence, and the portion of it in the one fragment becomes united with the portion of it in the other. Before this period has elapsed, the coagulated blood between the ends of the bone is replaced by a gelatinous fluid, and a reddish, fleecy substance often covers the fractured ends.

In the second stage, from the tenth to the twenty-fifth day, the swelling of the parts becomes firmer, adhering more and more intimately to the substance between the ends of the bone; the muscles regain their former appearance, and the swelling seems to recede towards the centre of the limb. The central cavity of the bone is now entirely filled up by a fibro-cartilaginous texture, into which its mem-

brane has been transformed, forming a species of peg between the two ends.

After the twenty-fifth day, the swelling around the fracture—"the tumour of the callus"—by degrees passes into cartilage, and then into bone, forming a solid ferule or clasp, in close contact with the bone. This is covered, like the original bone, with a skin, so that the outside being entirely invested by the same membrane, no mark remains of the breach of continuity. The surrounding cellular tissue is still stiff and hardened. The central peg rapidly assumes a greater consistence, and soon forms a solid osseous cylinder. There is now a tolerably firm union between the broken bones; and this stage of the process corresponds pretty nearly with the time when the surgeon discontinues the apparatus for keeping the ends of the bone in union.

Between the third and sixth months the tumour of the callus becomes gradually more compact, and the central peg undergoes a similar change. The substance between the fragments has all the consistence of bone, but it has still to be changed into bone, and become definitive callus.

The peg also suffers a transformation; it becomes of a lighter texture; cells are produced within it; and after a time it disappears, leaving the central canal as free as before, while the medullary membrane again assumes its former character. Lastly, the external portion of the provisional callus disappears.

The process, however, just described is drawn from observations on quadrupeds after fracture of their bones, and does not occur in the human body except under particular circumstances. That it does so in the lower animals is owing to the union being constantly disturbed in order to observe accurately the process of repair. In man, however, union of a fractured rib takes place in the same way, owing to the fracture being perpetually disturbed by breathing.

During the first ten days after fracture in the human body, little or no change seems to take place beyond the effusion of coagulable lymph (a clear, fluid-like, dilute jelly) and serum (the watery part of the blood seen after a clot has formed when any person is bled), which trickle out from the pores and wounded ends of the vessels. A little later, coagulable lymph is poured out between the ends of the broken bone, and this by degrees becomes converted into bone. In some cases fibres and cells form first of all; in some parts it is converted into cartilage. When the broken ends can be nicely adjusted, the new material is simply deposited between them. Under other circum-

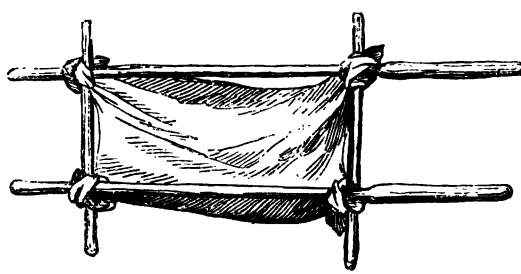
stances it fills up angular spaces, and forms a hard lump of callus.

No person should be ignorant of the fact, that though this provisional callus may be so hard as to serve for gentle ordinary movements of the limb, yet that so long a period as eight or nine months may elapse before the process of repair is complete; and hence that, during this time, any one who has had the misfortune to fracture a bone should be extremely careful to avoid exposing it to any kind of violence.

The great division of fractures is into simple and compound; a fracture being compound when the broken bone protrudes through a wound of the skin.

The symptoms of fracture are,—1. Bending, shortening, or twisting of the limb. 2. Great looseness; one end of the bone moving independently of the other; or when pressed upon, one part giving way. 3. Crepitation; that is, a grating noise is heard when the broken ends are rubbed against one another. If the broken parts are much displaced, they must be drawn straight before this sound can be heard. The treatment, which applies alike to the leg and arm, is to place the ends of the bone in their natural position, so that its outline corresponds with that of the bone in the sound limb, and to maintain them there.

When a man has broken his leg or thigh in the street, he should, with all gentleness, be placed on a litter or stretcher; if these cannot be procured, a board or shutter may be used. If these are not at

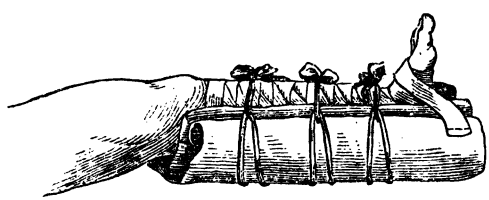


hand, a sort of cot (as in the figure) may be made by tying a blanket, or piece of canvas, on two stout pieces of wood. Two shorter cross-pieces will give additional firmness and steadiness to the apparatus.

He should be lifted with the utmost gentleness; care being taken that the broken end of the limb does not hang down, as otherwise the end of the bone may be forced through the skin, or a large vessel or nerve injured. The legs should be tied together, and the bearers carefully instructed to carry the patient quite level, as persons have rolled off shutters and sustained terrible injuries in consequence of neglecting this precaution.

So soon as the patient is put to bed, his trowsers should be ripped off and withdrawn; the limb is then to be set. One person holds the upper part of the limb, and then the surgeon draws the lower part downwards till the limb is of the same length as its fellow. This is a dreadfully painful part of the process; but it must be carried out with firmness, though with gentleness, or both limb and life may be lost. Chloroform is often given to spare the patient this suffering; but it is better, if he can bear the pain, to avoid it, as it often causes spasmodic movements of the limb before insensibility is produced.

The limb is then placed in splints, which may be formed of pasteboard or gutta percha soaked in hot water and carefully adapted to the shape of the part; one being placed on either side, and both together not being quite so wide and round as the limb. Sometimes wooden splints made expressly for each part by surgical instrument makers are employed, and for most kinds of fracture they are the best. Sometimes a firm roll of sheeting or a sand-bag on either side, held in position by means of strong tapes passing completely round, may be substituted. Greater steadiness may be obtained by folding thin pieces of deal about three inches wide in each end of the sheet, or a small bundle of straw tied together lengthways.



FRACTURED LEG SET IN SPLINTS, AND LAID ON A FOLDED PILLOW.

When the thigh is fractured, a long splint reaching from below

the patient's constitution. Here the surgeon has sometimes to cut down on the end of the bones and saw them off, the limb being then bandaged up again; or a seton has to be passed right through the fracture, limb and all, or other means adopted to excite inflammation. Occasionally all means have failed.

In certain cases of compound fracture—that is, when a bone is pushed through the skin—no skill can replace it, till the surgeon has either enlarged the wound or sawn off part of the bone. If, however, in addition, the bone be very much crushed, or if from the coldness and swelling of the part there is reason to think any of the great blood-vessels are torn through, it may be necessary to amputate the limb. Although some excellent general rules have been laid down on this subject, yet so many varieties of accident occur, so many causes complicate fracture, that each case must in some measure be judged by its own merits. While it has really occurred that a limb condemned by the surgeon has been completely saved solely by the patient's refusal to have it amputated, it has still more frequently happened that the patient has not consented to amputation till death was inevitable. Very often a limb which the surgeon has saved from the most laudable motives, or out of compliance with the patient's wishes, proves ultimately such a burden that its removal is urgently demanded. These serious results, however, are much more apt to occur in the leg than in the arm, which, unless severely crushed by machinery, railroad accidents, &c., rarely requires amputation.

CHAPTER XXV.

DISLOCATIONS.

Dislocations are known to have occurred by the altered shape and total loss of movement of the part, while there is not that looseness we see in fractures. When we handle a broken limb we can easily see that if we suddenly let go our hold of the far end of the limb, it would drop like a flail; but in a dislocation all moves in one mass.

I must here impress upon the reader a fact important to remember, namely, that the limbs of the aged are much more liable to be broken than dislocated, owing to a peculiar alteration, which at this period of life takes place in the more solid constituents of the bones, by which they are rendered more brittle. In addition to this, one very

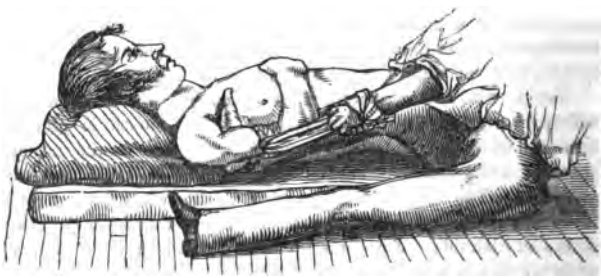
important part, that of the neck of the thigh bone, undergoes a complete change of form, passing gradually from an acute to a right angle, rendering it still more liable to fracture from the slightest causes. Whenever, therefore, an elderly person has slipped off the curb-stone or a door-step, and complains of intense pain and inability to use the limb, we may always suspect that this bone is broken, however slight the fall or slip may have been.

The Lower Jaw is sometimes dislocated by gaping or yawning widely, or even by a very hearty laugh. The mouth is suddenly fixed, and wide open; the person cannot speak, and makes the strangest grimaces while endeavouring to do so. It is for the most part easy to reduce. The thumbs, well guarded by linen being wrapt round them, should be placed on the back part of the lower jaw, one thumb on each side. Firm pressure downwards is now to be made, while the chin is forced upwards with the fingers or by an assistant. When it is felt that the bone is on the point of yielding, the thumbs should be slipped to the outside of the jaw so as to guard against every chance of their being bitten. Where no one will risk his fingers, the pressure may be made with the handle of a fork or a piece of wood.

The Shoulder.—When the shoulder is dislocated the arm cannot be brought from the side, or there may be a difficulty in raising it upwards. The form of the joint is clearly altered, but very differently in some persons to what it is in others, for the head of the bone may be driven downwards towards the arm-pit, or outwards on to the blade-bone, or forwards under the collar-bone. A round hard mass, as large as an egg, is felt in one of these places; it is the head of the bone. There is great pain, especially when the head of the bone is driven into the arm-pit, as it then presses on the great nerves of the arm; and sometimes the arm cannot be moved from the side, except to a very limited extent, and every attempt to do so causes great suffering.

Like every other dislocation it must be reduced as soon as possible, and it is not difficult to replace the bone when the attempt is made soon after the accident. The sufferer lying on his back, the surgeon throws off his boot and sits down face to face with his patient; he then, as in the figure, page 234, places his heel in the arm-pit, and grasping the arm, draws it towards him; so soon as it is fully extended the muscles around the head of the joint pull it into the cavity or socket with such irresistible violence, that even when it has been drawn out and kept on the stretch by powerful pulleys, it

returns with an audible snap. *After* reduction a sling should be worn for two or three weeks, and great care taken that the limb be not exposed to any violence.



Any dislocation, however, if neglected or unrecognised, if complicated with fracture of the socket or head of the bone, or if any entanglement of a projecting point of bone among tendons has taken place, may prove in practice very difficult to reduce. Emetics occasionally succeed in making the patient so weak and listless, that the muscles no longer oppose the same resistance to the surgeon's attempts; chloroform is used for the same purpose, complete relaxation taking place so soon as the patient is rendered insensible. In dislocations of the smaller joints the patient's attention should be directed from the subject. But it sometimes happens that the best directed skill fails, even when aided by mechanical appliances, such as powerful pulleys; every exertion, however, should be made to avoid such an unfortunate result; and so long as the bandage on which the traction is made is smoothly and evenly applied, and the traction itself is properly and steadily made, no danger need be feared from anything human strength could do. When Damiens was condemned to be torn in pieces by wild horses, after the animals had been urged to the most frantic efforts for a full hour, he looked up at his tormentors and smiled! It was not till the ligaments had been divided by the executioner that the barbarous edict could be fulfilled.

The Elbow.—This joint is much more rarely dislocated than the shoulder; the displacement is reduced by bending the arm across the knee. Here, instead of one bone being dislocated from another, as happens in the shoulder, two are dislocated from the third; and as either one of the two bones of the forearm may be displaced, it follows that there are several varieties. Some of them are difficult to

recognise, especially when rapid swelling comes on; some are difficult to reduce; and some when reduced rapidly slip back again. After the reduction a bandage and sling should be worn for two or three weeks; and if a surgeon's aid can be procured, it would be advisable in many cases to have the arm properly strapped, and constitutional treatment continued till the ligaments have again firmly united.

The Wrist, Fingers, &c.—When the wrist is dislocated the surgeon must grasp the hand, and the arm being fixed, the hand is then drawn away from the arm, and turned either backwards or forwards, according to the direction of the dislocation; the displaced bones then glide back to their natural position. Dislocations of the thumb and fingers are reduced by bending them upon the dislocation; that is, towards the opposite side to that on which dislocation had taken place. The thumb can seldom be restored by pulling like the arm and shoulder.

The Thigh is dislocated in so many various directions, that it would be impossible to give even a condensed account of all. The distortion of the limb is quite of a different kind in some cases to what it is in others. In one form the toes are turned inwards, in another outwards; in extreme cases they lie across the instep of the opposite foot, and the limb is generally shortened. When any of these signs are present, and there is a loss of power and motion, with a fixed look about the limb; when it cannot be turned round; and when there is no crepitation, we may be pretty sure that dislocation has taken place.

No dislocation requires the exercise of so much strength as this. The patient must lie on his back, and the surgeon, sitting before him, passes his leg between those of the patient, and fixes the hip by pressing with his foot against the fork; he then grasps the foot and ankle, and pulls steadily downward with his whole force. Should he not succeed the hip may be fixed by a folded sheet passed between the legs, and tied to some fixed spot near the patient's head; another sheet is fastened by the "close hitch" just above the knee, and at this, or at a cord fastened to it, several persons may pull, or the rope may be passed through a pulley, and managed by one person. When the limb is drawn out to its full length, the surgeon seizes the thigh and lifts it towards its natural position; the head of the bone will fly back into the socket with a loud snap.

The Knee Cap and Knee.—Dislocation of the knee cap may be reduced by bending the knee up towards the patient's head and

flexing the leg forcibly back upon the thigh; the knee cap or pan is then easily pushed back into its proper position. But if the knee itself be dislocated, the best plan to reduce it is for one person to hold the thigh and pull it upwards as hard as he can, while another grasps the leg and draws it downwards until the dislocated bones slip back into their proper place.

Dislocations of the Ankle, Toes, &c.—Dislocation of the foot or ankle, as it is usually called, may take place inwards or outwards, forwards or backwards. When dislocated inwards, the small bone of the leg is generally broken, not at the ankle joint, but a little way up. One person must hold the leg firmly, while the other pulls the foot away from the leg in a line with it, as if he would lengthen the limb: when he has once got it into a line with the leg, he can generally push the foot back into its proper place. Fracture must be looked for after reducing a dislocation inwards; there may be no displacement, but the bone will be found, on pressure, to be broken. about three inches above the ankle. When any of the small bones of the foot are thrust out of place, it is not always possible to reduce them, and they may require to be removed. Dislocations of the toes are reduced like those of the fingers, or by simple extension.

If dislocation of the knee or ankle be compound, that is, if the bones be pushed through the skin, it will often require amputation. It is rarely that such an accident occurs, and only extreme violence can produce it.

CHAPTER XXVI.

SPRAINS.

Sprains or Strains of any joint require far more urgent attention than is generally given to them. People are very apt to say, "Oh, it is only a slight sprain; I twisted my ankle by slipping off the curbstone, or in coming down stairs—it will pass off in a day or so." It is more prudent to think he has done something worse than break his leg.

Sprains, when neglected or mismanaged, especially in persons of unhealthy constitution, not unfrequently lead to irreparable injury to the joint, or loss of the limb: it is important, therefore, that the principles of treatment, which are very simple, should be generally under-

stood, so that in slight cases, or in the absence of medical assistance, they may meet with immediate and judicious care. The following remarks will, for the sake of convenience, refer chiefly to the ankle, but are equally applicable to sprains of any other joint. It should at once be ascertained, before swelling has commenced, whether there is any distortion of the foot outwards, inwards, or in any other direction; or any appearance of projection or deformity about the joint. If this be the case, it is almost certain that fracture of some of the bones has taken place, and the accident is of too serious a nature for domestic treatment. In less severe cases the foot should be immediately plunged into water, as hot as the patient can bear, and deep enough to reach half-way up the leg. As this rapidly cools, fresh portions should be added, from time to time, so as to maintain the temperature as high as possible, and the cooled particles should be prevented from collecting in a stratum at the bottom of the pail by constant stirring. This should be continued for two, three, or four hours, according to the severity of the case, and until all pain has completely subsided, and should be renewed as often as the pain returns, which, for the first few days, will probably occur from time to time. Perfect rest and immobility of the joint being the cardinal point in the treatment, it is advisable that, except in very slight cases, the patient should spend the first few days in bed, after which he may be removed to the sofa; it will be found, also, that much relief may be obtained by keeping the injured foot on a higher level than the rest of the body, which may be done by supporting the leg upon a hard and firm cushion, and preventing the pressure of the bedclothes by a light framework, which may be readily made out of a few sticks, bent into the form of an arch (see p. 225). Shortly after the accident swelling sets in, and may proceed to a considerable extent; so long as it continues, the joint should be covered with folds of thin rag, moistened with a cooling lotion, such as the following: muriate of ammonia, three drachms; water, vinegar, and spirits of wine, of each three ounces. Should the swelling be accompanied by much heat, redness, and throbbing pain, leeches may be applied in numbers proportioned to the age and strength of the patient—twelve are generally sufficient for a healthy male adult; it is better, however, to avoid them, if possible, in persons of weak constitution. When the pain and swelling have subsided, the patient is too apt to suppose that there is no further risk; he begins to move the foot, or even ventures to put it to the ground, when a relapse is the inevitable result. The immobility of the joint should therefore be secured by the application of splints, which are

most readily made of gutta percha, about an eighth or a sixth of an inch in thickness. Two pieces of this should be cut somewhat in the shape of the halves of a gaiter, but not so broad, as it is not necessary that they should quite meet in front, and they should merely turn over the edge of the sole; they should be of sufficient length to extend from the point of the little toe to three inches above the ankle. When softened in boiling water they may be accurately moulded to the joint, and immediately hardened by plunging them in cold water; they should then be applied, first defending the skin by a piece of soft lint or a layer of carded cotton, and secured by a bandage extending from the toes, and drawn moderately tight, but not so as to occasion uneasiness. They may be removed once or twice a-day, and the joint well rubbed, either with the hand alone or with some slightly stimulating liniment. For this purpose "Opodeldoc" is a favourite popular remedy, and is very well adapted for the purpose; or the ordinary liniment of hartshorn and oil may be employed, and will be found equally efficacious. The greatest caution must be observed in commencing to use the limb, and the slightest return of pain must be the signal for again laying up. The weakness and stiffness of the joint, which sometimes remain for a long time, may be alleviated by the cold douche—a very useful remedy when not abused, as it often is. The contents of a large ewer, poured from a height of three feet, will be sufficient, and vigorous friction with a coarse towel should immediately succeed. The same general principles of treatment, as has already been stated, apply to sprains in any situation. Where the part cannot be conveniently plunged in hot water, fomentations may be substituted. The black and blue discoloration which accompanies bruises and severe sprains is caused by blood which has escaped from small vessels ruptured by the violence. It cannot be removed by leeches, as is often supposed—in most instances, they do more harm than good; it must be left to the efforts of nature, or, when extensive, absorption may be slightly hastened by gentle friction.

We must not confound with sprains those swellings of the joints which occur without violence. As some of them are among the most formidable diseases to which the human frame is subject, while others, such as housemaid's knee, require little more than rest, bandaging, cold lotions, and puncture into the fluid, it is imperative to resort to those who alone can decide upon the case.

CHAPTER XXVII.

BURNS AND SCALDS—BITES OF DOGS AND STINGS OF INSECTS.

Burns and Scalds are so extremely alike in their nature, that even in a purely scientific work they may be classed together, and still more so here, where the chief aim is to impart practical instruction in the most compressed form. It is almost unnecessary to say that burning clothes must be put out immediately, by laying the person on the floor and rolling a thick tablecloth, great coat, or hearth-rug over him. What still continues to burn may be put out with water, warm if possible, and not dashed over a patient seriously burnt, as such a shock has proved fatal.

The patient should then be put to bed, and a little wine or spirit and water given; if there is much pain, laudanum, in the proportion of a drop to a child a year old, up to twenty-five or thirty drops to a grown person, may be administered. The clothes must then be removed with all possible gentleness, plenty of soft cotton, wool, or wadding, being in the meantime procured. This is then laid thickly on the burned part, and secured by a bandage. In the more severe cases of burn pus will often form abundantly for days after; it should be gently sponged away with warm water, and lint laid over the part. After deep burns or scalds it often becomes necessary, as healing sets in, to keep the part on the stretch, to prevent the contraction or puckering of the skin, which causes the frightful deformities seen after these accidents, and which, by the way, when they do ensue, are generally remediable wholly or in part.

When the patient seems getting drowsy and low, and the pulse small and flickering, steps must be taken to raise the sinking powers, or death may snatch him from our grasp. This is indeed the great source of danger. Wine, ammonia, and brandy must be given, with hot beef tea or gruel. Smelling salts should be held to the nostrils, hot bricks or bottles of hot water applied to the feet, and mustard poultices over the bowels or to the calves of the legs. As a last resource, an enema, containing three or four table-spoonfuls of turpentine in a pint of gruel, may be thrown up. Death generally ensues when more than half the surface of the trunk is burned or badly scalded. Cases of recovery are on record, but they are rare exceptions.

When a child is only slightly scalded, a little violet powder may

red-hot iron, nitric acid, or potassa fusa, and poulticed to encourage a free discharge of matter. A little stimulant should be given, and the patient should as soon as possible be placed under the care of an experienced surgeon, who ought to see him occasionally for at least six months, for then only does he begin to be safe.

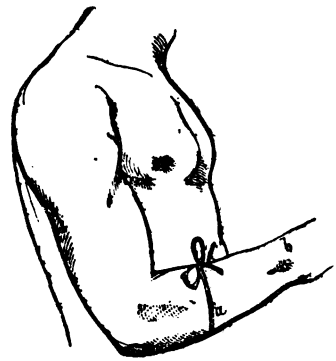
Even when it is certain that the dog is not mad, the wound should not be neglected, as a very troublesome form of sore is apt to result, which discharges matter for a long time, and leaves the bitten part weak and painful. Hot water should be poured, as from a tea-pot, into the wound several times daily, or by a sponge, and the nitrate of silver (lunar caustic), sharpened to a point, applied to every part of the bite. To allay pain at night, twenty or thirty drops of laudanum may be given. The alarm felt at first may be quieted by giving the patient a little wine, and re-assuring him as to the true nature of the accident. The bowels should be opened with a brisk purgative, with which a little calomel should be given, and mild, cooling medicines should follow for some time after.

The bite of a cat, or even that inflicted by the human teeth, proves occasionally extremely serious; and if the root of the nail be bitten through, the nail often drops off, or must be torn off, before the place will heal. In such a case as this, if the wound threaten to spread, powerful caustics, such as the nitrate of silver, should be applied to every part of it. Cases are related where hydrophobia has resulted from the bite of a cat; but they are extremely rare, and not very well established.

Of the bites of *reptiles* we have in this favoured country very few examples. Abroad, as in India, and in some of our colonies, they are common enough, and the introduction of living specimens into zoological collections sometimes offers an example, as in the case of the keeper at the Zoological Gardens at Regent's Park, who died from the bite of the cobra capello. The only animal of this kind which we have to dread in England is the common adder. The bite is by no means painful, but it is rapidly followed by alarming weakness, unless stimulants are given on the spot. The patient grows pale and faint; cold sweats break out; the limb becomes swollen and powerless, and, without care, death may close the scene.

If the person bitten has sufficient presence of mind, the first thing he ought to do is to check the introduction of the venom into the system. Suppose that the wrist has been bitten as at *b* in the following figure. Immediately tie a tape or string between the wound and the

heart, that is at *a*, and scarify the bite with a penknife or razor; and if he can reach the part with his mouth, the best way would be to suck the wound; no air-pump or exhausted cupping-glass could effect the purpose so well as the beautiful mechanism of the human mouth. If not, any of the bystanders might safely do so, as, unless there is a cut upon the lips, no dangerous results need be apprehended from the poison. If this is not practicable, a small glass, exhausted of its air by burning a piece of paper in it, should be placed over the wound, and olive-oil may be freely rubbed in it. The patient should then be put to bed. Wine or brandy may be given; hot bricks to the feet, and a mustard poultice to the abdomen. Any abscesses which form afterwards will require to be opened.



Mosquitos, bugs, fleas, and some other insects, also poison the wound by secreting into it a fluid which renders the blood thinner and more fit for suction. In warm climates the bite of the mosquito is often followed by severe inflammation; and if the skin be scratched, troublesome sores may result. The pain and itching produced by these bites are greatly relieved by rubbing a little liquid ammonia over them, either pure or mixed, with an equal proportion of olive-oil. Eau-de-Cologne or lavender water may be used for the same purpose. On the west coast of Africa, where some of the worst cases of this kind are seen, the natives exhaust a rude cupping-glass, and place it over the wound.

Insects which sting, as wasps, horseflies, hornets, or bees, not only insert a poison into the wound, but also frequently leave the sting itself, or part of it, behind. In this case the sting should be carefully drawn out with a pair of tweezers, or the skin may be opened with a needle, when a little squeezing will generally force out the sting. It is also recommended to press down the skin on each side of the sting with the pipe of a watch-key; the sting will then protrude, and may be seized and drawn out.

Frictions of various kinds, as of hartshorn and oil, have been

recommended, but I have more confidence in cooling lotions. If the patient can reach the part with his mouth he will soon find relief from sucking till it ceases to burn, and all the other symptoms will then rapidly subside of themselves. When the throat is stung the best application is the following:—put a piece of ammonia or smellings salts, the size of a nut, and four table-spoonfuls of vinegar, or a little ether, into a glass, and bathe the part constantly with it.

Bugs and Fleas.—It would be of more importance to devise some effectual means of keeping these pests at a distance, than of relieving the itching occasioned by their bites. The swelling of the eyelids occasioned by bugs is, however, very disagreeable, but the lotion already mentioned will generally remove it. As respects any means of prevention beyond the destruction of any live specimens as they become visible, I have little to say, further than to recommend that iron bedsteads should be substituted for wooden; that the bedroom should be kept free from litter of every kind; to see that children do not wet their mattresses and blankets; and to close with putty or paint all the chinks in the floors and walls where these vermin might harbour. When bugs become very numerous, the only way to get rid of them is to tear down the paper from the room, and have the walls washed with lime, or fumigated by putting a little brimstone on a hot shovel, previously closing every chink by which air could enter. Here, however, it must be remembered that the vapour of brimstone agrees as little with the human lungs as with the respiratory apparatus of bugs.

Lice.—The best means of destroying lice is to rub a little blue ointment, calomel, or white precipitate, about the roots of the hair. Should these means prove ineffectual—which is very unlikely—a lotion containing a little corrosive sublimate may be employed. A small tooth-comb will not always suffice, and lice are apt to fasten where it cannot be used.

CHAPTER XXVIII.

ABSCESSES, CHILBLAINS, ETC.

ABSCESS.—An abscess is a collection of matter or pus; it differs from a boil, which contains a core—that is, a hard mass which is gradually protruded, and leaves a gaping hole; while an abscess may open and empty itself by a hole not bigger than a pin's head. It may arise from some foreign body being fixed in the part; from a blow in an unhealthy subject; or from constitutional causes in delicate persons.

The local and immediate treatment is the same. Surgeons generally try at first to disperse the abscess, or prevent it from coming to a head; aperient medicines, calomel and opium, salines, leeches, and lotions often succeed; sometimes tartar emetic, so as to keep the patient nauseated, acts better than any known remedy. When, however, it goes on getting worse, poultices are generally ordered to draw it; but their value seems very doubtful. They leave the abscess time to grow larger, and destroy more of the healthy structures; they are apt to bring out quantities of very painful boils; and sometimes when applied too long, they leave the part so weak and exhausted that it will not heal.

A far better plan is to evacuate the matter as soon as it has formed. This is generally known by the occurrence of shivering fits; and by the part below feeling softer, as if there were fluid underneath the skin. A bistory or lancet is used for this purpose; some surgeons have recommended a harelip needle. The lowest side of the abscess should be chosen, so that the matter may flow away as fast as it forms, which continues to be the case for some days following. If it closes, another opening should be made, and the sides then gently pressed together by a small compress, each side secured by a bandage; the opening should be covered with lint.

Abscesses which arise without any injury, and pour out thick matter of the same consistence and colour throughout, generally require light diet and mild aperients and bitters. In the scrofulous abscess, such as that which forms in the neck, a more tonic treatment is required, iodine, iodide of potassium, quinine, or steel, in the form of the citrate or wine (see p. 206); plain, nutritious, unstimulating diet

is the best. The scars left by the bursting of such abscesses may generally be removed.

WHITLOW is a painful inflammatory affection of the finger. It generally attacks the tip, but may have its seat about the root; it is accompanied by signs of active inflammation, such as pain, heat, redness, and swelling of the part. When severe, the whole hand may be affected, and in mismanaged cases the inflammation may even extend up the arm. When a yellow speck shows itself, it indicates pus.

The common treatment by poulticing is most objectionable. When the patient can, he should at once seek the advice of a surgeon. Every day people are seen in the hospitals, on whom amputation of the whole or part of a finger or thumb has to be performed, in consequence of their having trusted to poulticing; hoping that when the whitlow came "to a head," it would burst of itself, and there would be an end of all the suffering. The skin is often so thick that before this desirable consummation can be attained, all the structures near it are destroyed, sheaths of muscles and tendons, bones and joints being indiscriminately affected. A still more objectionable practice is that of applying cobbler's wax or some powerful stimulating plaster to draw the inflammation to the surface. It is difficult to calculate the mischief that ensues from this erroneous practice.

The finger or thumb should be repeatedly plunged into water as hot as it can be borne. After this has been done for the greater part of an hour, the lunar caustic should be rubbed freely over the skin for a considerable distance around. A powder containing four grains of calomel with twelve of Dover's powder is then to be given, and followed by a black draught. Some surgeons have recommended frequent emetics with a view of lowering the inflammatory action. The hot bathing should be sedulously continued all this while, and a lotion containing acetate of lead may be freely used. As soon as a whitish or yellowish spot is perceived it should be opened, but there is no necessity for laying open the part very widely, as is sometimes done. All that is required is an exit for the matter, the formation and retention of which have caused all this mischief.

So soon as the matter is evacuated all the symptoms begin to abate, but it will not be long before they recommence, unless further steps are taken. Fresh accumulations of matter must be opened as fast as they form, and the patient will by this time have gained so much relief that he will no longer object to the operation.

A simple dressing of wet lint, and a small bandage to keep the sides of the abscess gently in contact, and retain the lint in its place, are all the local treatment that is required. Should any sinuses form they should be slit open; the operation is almost painless, as the skin has nearly lost all its feeling. By sinus surgeons understand a small passage discharging matter, which refuses to heal up from the bottom.

Boils.—A boil is a very hard, red, painful, elevated heat spot, sometimes almost as large as a walnut. For long it was considered that they were beneficial, purified the blood, &c., but this antiquated prejudice, which simply arose from negligent observation, is giving way to more just ideas. Under this view patients were purged, bled, and lanced for a complaint which yields better to acids or alkalies with bitters, and a table-spoonful of yeast two or three times a-day; the external use of caustic, and milk diet.

Carbuncles are very similar, but larger and still more lowering than boils, consequently the strength requires to be more assiduously supported. They are often treated with great success by dissecting out the hard core, and using water dressing to the cavity left behind.

Boils also form on the fingers and toes, and are very apt to be confounded with whitlows. They are quite on the surface; occasionally, however, a boil and a whitlow form at the same place. The skin is raised up and distended with fluid, as if it had been severely scalded. It is, however, much smaller than a scald, and often dotted over with purple patches. The skin should be snipped off with scissors, which is a painful affair, and then wet lint should be applied. When several boils form in succession the most successful remedy is the lunar caustic applied round the edges of each, followed by saline medicines, and a little laudanum twice a-day.

Chilblains.—In chilblains the skin is not always elevated, but there is a mark like the stain of port wine. They are often accompanied by considerable stinging and pricking, and if neglected or improperly treated, chilblains, especially in scrofulous children, may lead to obstinate ulcers, which occasionally will not heal till country air or a residence at the sea-side has been procured for the patient.

A few words as to the nature, prevention, and treatment of chilblains may not be unacceptable to those who know by experience the pain and annoyance which they often occasion during the cold and wet winter months. The immediate effect of cold upon the exposed parts of the body is to lower the vital energy; the small blood-vessels of the skin contract, and the part becomes cold, pale,

and numb. In this condition, if heat be suddenly applied, as by coming into a warm room, or by holding the hands or feet, the parts most frequently affected, to the fire, the blood again rushes to the surface with a degree of force which the vessels cannot withstand; they become much distended, and the part is red, swollen, and painful. When this process is frequently repeated, the vessels are permanently weakened, the part is slightly swollen, assumes a bluish or purple colour, and is the seat of intolerable itching or tingling pain, which is increased by heat. It is now extremely susceptible to the effects of cold, which produces fresh attacks of inflammation; this frequently results in the formation of blisters, the cuticle of which giving way, leaves an open sore, which is generally very difficult to heal. The weaker the circulation the more liable are these effects to be produced. We thus see why chilblains are most common on the hands and feet, which are at a distance from the centre of circulation; and also why they so frequently attack children, delicate females, and persons in a weak state of health, while the robust and healthy seldom suffer. The knowledge of the cause suggests the appropriate precautions to prevent their occurrence. The circulation of the extremities should be strengthened by plunging them into cold water every morning, and immediately, without waiting till they are thoroughly chilled, rubbing them well dry with a coarse towel. The feet should be warmly clothed; lamb's wool or merino should be worn next the skin, and a pair of silk stockings drawn over them will add much to the warmth, without interfering with the fitting of a properly made shoe. Those who habitually suffer from cold feet, will derive much comfort from a sock of chamois leather. When there is nothing in the state of the general health to prevent it, active exercise may be taken in all weathers, the feet being protected from cold and wet by Indian rubber goloshes. On returning home, dry stockings should be immediately substituted for those which may have become damp, either from the penetration of water, or from the condensed perspiration; and while doing so, the opportunity should be taken of restoring the warmth of the feet by vigorous rubbing with the hand. If they be held to the fire without this precaution, or even if a warm room be entered, chilblains are almost sure to result. The treatment of chilblains of which the skin is unbroken consists in defending them from the cold, and in the application of some slightly stimulant embrocation. Of these, one of the most useful is a mixture of six parts of soap liniment with one of tincture of cantharides. This should be rubbed upon the part twice

or three times a-day, and a piece of soap plaster should then be applied, to maintain the temperature, and to prevent the friction of the shoe. Equal parts of oil of turpentine and balsam of copaiba is also a useful application, but is objected to by many on account of its unpleasant smell; the same objection, however, does not hold good with regard to camphorated oil, camphorated spirits of wine, or the ordinary liniment of hartshorn and oil, which may be employed in slight cases. If the skin has become broken, the sore should be dressed with some stimulant ointment, to promote the healing process. The red precipitate or the resinous ointment is the best; any small piece of dead tissue which may adhere to the surface of the sore must be removed by poultices before these applications are employed.

In some obstinate cases, nothing effects any material benefit till the patient is removed to the country or sea-side, and then the change is almost magical. A child who has had a deep inflamed ulcer form after a chilblain, and who has not slept without sedatives for weeks, or had any motion of the bowels without aperient medicines, will fall into a sound sleep the first night after removal to a different air; the bowels will rapidly begin to act without medicine, and the appetite for plain food will increase daily. In order to hasten this beneficial change, it is desirable to call in the aid of quinine and steel; pony exercise to fatigue should be inculcated; milk and lime-water, with brown bread, for breakfast, or instead of tea, are advisable, and plenty of fresh meat for dinner,—all salt or highly-seasoned food being improper.

Chapped Hands, one of the minor miseries of human life, are a source of annoyance not only to those who suffer from them, but to those who have to look at them. They seem to depend on an imperfectly organized inelastic skin, contracting under the influence of cold. There are few cases which will not yield to the old-fashioned remedy of rubbing in grease and wearing gloves both day and night; but where the affection is more obstinate, a solution of one part of honey in four of water, applied night and morning, will generally effect a cure. If additional means become necessary, the spirit of camphor, or tincture of iodine, may be brushed over the chaps. In some constitutions it becomes necessary to resort to still more powerful remedies; the hand should be well poulticed, and, after the poultice is taken off, thoroughly washed with hot water, and dried, a solution of ten grains of nitrate of silver to an ounce of distilled water is to be brushed over all the cracks. The objection to this is, that for

some days after a black stain is left on the part; but this is more than counterbalanced by its good effects, and gloves can easily be worn to conceal it.

Corns are a growth of the cuticle or scarf-skin, which becomes thick and hard; they are generally produced on some point much exposed to the pressure of the boot or shoe. Pressure, however, is not the sole cause; for some persons can wear tight boots and suffer but very little, while in others wearing them for a single day will produce corns. The best palliative for the pain is to soak the feet in very hot water, and then to touch the corns well with caustic or tincture of iodine. The real remedy is to treat them like Warts: the shank of a tobacco-pipe is to be made red-hot, and the part touched with the tip several times in succession. The corn, or the wart, generally dies very speedily after this, and may be scratched off when loose. This is infinitely better than excising them, which is done by softening them by bathing, and then cutting completely round them with a sharp lancet. No one should attempt the operation on his own foot, as very bad, or even fatal results have followed. Where both cutting and burning are objected to, circular plasters, with a hole in the centre, may be tried; or, if the corn is on the sole of the foot, a sole of felt may be contrived with a hole to receive the corn. Liniment of ammonia, strong acetic acid, strong nitric acid, chloride of antimony, &c., are all recommended; but perhaps none of them are so useful as the hot pipe.

Bunions are still more difficult to manage; they are seated on the side of the joint of the great toe, and sometimes consist of a bag filled with a glairy fluid between the skin and the bone. At other times the toe is distorted, the tip of it being drawn outwards, and the ligaments and the head of the bone thickened. This is much the more serious form.

Pressure should be avoided, and the foot freely bathed with hot water. If there is the distended bag, it should be punctured with a harelip-needle; for if it be allowed to inflame and burst, it will prove very difficult to heal. A soft discutient plaster, as of mercury, often gives great relief. When inflamed, cold lotions and absolute rest are called for. If neglected, the head of the bone may enlarge, and ulceration set in, leading to great suffering, deformity, and loss of motion in the joint.

Varicose Veins arise from a weakened state of the coats of these vessels, whereby their natural elasticity is in a great measure lost, in consequence of which they drive the blood more slowly and feebly

towards the heart; and where, in addition, any obstruction to the return of blood takes place at a point nearer the heart, as in persons obliged to stand great part of the day, as laundresses, shopmen, &c., the whole weight of the ascending column of blood is thrown on the weakened veins, which in consequence become thickened and tortuous. In course of time, ulcers may result from the faulty state of the circulation, or a vein may burst, and severe or even fatal hæmorrhage may follow.

Cold lotions, cotton-thread bandages, and attention to the state of the bowels and liver, will generally relieve slight cases; but if more persistent, the general opinion seems now to be that the most effectual remedy is to tie some of the veins below the knee. The vein and a fold of the skin are pinched up, a harelip-needle is passed underneath, and then a piece of silk is wound tightly round it in the form of the figure 8. Afterwards the ends of the needle are cut off with pliers. Three or four veins may be tied at one time, and the needles may be left in till they excite some irritation and swelling. This procedure, however, is quite beyond household surgery. When a varicose vein bursts, the foot should be placed higher than the body, and cold applied, or pressure may be made on the side nearest the heart.

Hæmorrhoids, or Piles, which are varicose veins, form about the lower bowel, and often prove a source of danger as well as suffering. A hot, burning sensation is felt on going to stool, and blood is frequently discharged in considerable quantity. When the hæmorrhage is great, cold water or ice must be applied; or some astringent wash, as a solution of sulphate of zinc; or continued pressure must be made upon the part. In the management of piles, care must be taken to avoid constipation; and in all cases patients find benefit from the steady use of some mild cathartic. Sulphur is much recommended, especially combined with lenitive electuary and supertartrate of potash. Independently of its laxative effect, says Mr. Hooper, sulphur appears to exert a kind of specific influence, and in many cases relieves the pain and irritation arising from piles a very short time after it is taken. A tea-spoonful taken in milk every night will generally keep the bowels sufficiently open, and in many cases effectually relieve the piles. Should the parts be much inflamed, leeches may be applied and Goulard lotion used. Where the tumours are considerable and flaccid, and without inflammation, powerful astringents, and even escharotics may be necessary. Gall ointment is often very useful, as also Ward's paste, a preparation

of black pepper; while a supporting bandage to the part will be found to give relief.

Sometimes small tumours, or excrescences of various shapes, form about the verge of the anus. These are excessively troublesome, and must be removed by the surgeon, either by ligature or the knife. Fissures also often occur in the lining membrane, and prove very annoying, while they afford a fertile field to the quack doctor for fraud and imposition. Any surgeon can at once relieve the complaint by an almost painless operation; but the charlatan reaps a rich harvest by magnifying the evil, and working upon the fears of the patient. In no diseases than in those of the rectum is it more essential at once to consult, not the advertising quack, but the honest and regular surgeon.

Fistula may become a complaint of a very formidable character, and require a serious operation for its removal; and thus, whenever an abscess is discovered to exist about the anus, it is necessary at once to apply to a surgeon, since, when taken at the commencement, much future suffering and annoyance may be avoided. The cellular membrane in these parts is very lax and loose; abscesses readily form among it, and, if unchecked, spread and burrow by the side of the bowel. When this is the case, the abscess bursts by a long narrow sinus or *fistula*, which may open and give exit to the matter, either externally at the verge of the anus, or into the bowel itself. In either case the sinus requires to be laid freely open so as to allow the healing process to take place. Let all who suffer from fistula take heed how they listen to interested persons who profess to cure the complaint "without the knife."

In women, many hæmorrhoidal affections depend on a disordered state or displacement of the womb, and nothing will permanently remedy them till this is set right.

Prolapsus ani, or falling down of the bowel, is a frequent complaint of childhood; and not uncommon in adult life. It consists of a protrusion of the bowel every time the fæces are expelled. It is easily returned by gentle pressure; and astringent lotions, such as alum, zinc, or lead, generally effect a cure. Sometimes, however, surgical interference is necessary, and a portion of the protruded and lax membrane must be removed. Instruments have been devised to retain the bowel within the body; but they are troublesome and awkward, while the knife will effect an almost painless and speedy cure.

CHAPTER XXIX.

SOME SPECIAL DISEASES AND ACCIDENTS—MINOR OPERATIONS.

RUPTURE, or HERNIA, is a protrusion of a portion of bowel underneath the skin, which it pushes before it. It may take place about the groin, the top of the thigh, the navel, or at any part of the front of the abdomen. It generally happens during violent exertion. Some pain is felt at the time of the accident, and a swelling observed, which increases in size when the person stands, and goes away when he lies down and presses upon it. It may also be felt more distinctly on coughing.

A truss is the remedy, after the rupture has been returned, and no pains and expense should be spared to obtain one of the best. Some chafing or uneasiness will be felt for a few days; but this will soon go off when the truss fits well.

When a rupture comes down, and cannot be replaced by gently kneading it with the fingers, ice should, if possible, be applied over the swelling, or a piece of linen dipped in cold spirit and water, upon which a current of air is blown by a bellows or fan, the linen being wetted as it dries. It may then sometimes be reduced; failing this, however, the surgeon should be sent for *immediately*, as if mortification of the gut ensues the result is very apt to be fatal.

STONE.—The chief symptoms of this formidable complaint are pain on or after making water, the stream of which is sometimes suddenly stopped. Bloody urine often flows after riding, especially when much jolting has ensued. The surest sign of all is that given by a steel sound introduced into the bladder; the ringing produced by the contact of the two hard substances being the only positive proof. The stone can only be removed by operation; it may be crushed if small and soft in the bladder, or it may be removed through an opening made into the bladder from without; but all attempts to get rid of it by other means will only lead to loss of time and money, and perhaps aggravate the disease.

THE EAR scarcely ever demands active interference; and its affections can wait best, perhaps, of all diseases, the surgeon's coming. When ear-ache is very bad, bathing it well with hot water, putting a roasted onion over or behind it, or a little cotton wool gently within its hollow, are useful. When wax is known to be present, the ear is to be syringed out; for this purpose the nozzle of the syringe should

never be thrust into the ear; the stream only should be thrown in, the ear gently dried, and then closed with cotton wool. In conclusion, I have one word of advice:—Never tamper with your own ears, or suffer others to do so.

DISEASES OF THE EYE.—As a general rule, the less the eye is subjected to amateur surgery the better; the delicate tissues of which it is composed lose their transparency with extreme facility, and the organ may be seriously injured, or altogether destroyed, by causes which in other organs would scarcely attract a moment's notice.

The anterior or exposed surface of the eye, as well as the inner surface of the eyelids, is covered by a delicate transparent membrane called the conjunctiva. Immediately below this lies a strong, white, fibrous membrane, the sclerotic, which incloses and, to a certain extent, gives form to the softer textures; the clear part of the eye, in form and appearance like a small watch glass, is the cornea; immediately behind this is the blue, gray, or brown iris, perforated in the centre by the jet black pupil, which frequently varies in size, contracting in the sunshine and expanding in the shade.

COLD IN THE EYE, as it is popularly termed, is an inflammation of the conjunctiva. This may occur at any time of the year, but, like other colds, is most frequent in damp and variable weather, and is readily induced by exposure to a draught of cold air, as by sitting near an open door when heated, or travelling in a railway carriage with the face towards the open window. The first symptoms are heat, itching, and stiffness of the eye, which soon becomes blood-shot; the redness soon extends until the whole of the white of the eye assumes a bright scarlet colour, which, if examined with a magnifying glass, is seen to depend upon an infinity of minute blood-vessels, invisible in health, but now distended with blood. A profuse discharge soon sets in; sometimes of clear water alone, more frequently containing flakes of mucus, the natural secretion of the conjunctiva, increased in quantity. This collects and dries upon the eyelashes, forming crusts, and matting them together during sleep, so as to render the opening of the eye in the morning a troublesome and painful operation; in some instances the discharge is so copious as to overflow the eye and run over the cheek, irritating and excoriating the tender skin in the neighbourhood. There is seldom much pain, but rather a sensation of itching and soreness, and a feeling as if a quantity of dust or fine gravel had got into the eye; it occasionally happens, however, that there is a good deal of actual pain, and such cases

should always be regarded with suspicion. The treatment consists in dropping into the eye, three or four times a-day, a solution of nitrate of silver (lunar caustic), in the proportion of one grain of the salt to an ounce of distilled water; the discharge should be prevented from concreting on the eyelashes by bathing them frequently with tepid water, and the edges of the eyelids should be anointed with fresh lard on retiring to rest, to prevent them from adhering together during sleep; at the same time a gentle action should be kept up on the bowels by small doses of Epsom salts, or by a Seidlitz powder every morning. Leeches are rarely necessary, and frequently injurious; when applied upon the eyelids, they are very apt to occasion a "black eye," owing to the escape of blood into the tissue immediately beneath the skin; if, therefore, they should be ordered by the medical attendant for this or any other disease of the eye, they should be applied to the temple or the eyebrow. As the disease declines, and the redness disappears, a solution of three grains of alum to an ounce of water should be substituted for the nitrate of silver drops, which should never be used very long at a time, as they are apt to produce indelible discoloration of the white of the eye. The alum lotion may be freely employed until the redness has been completely removed; and if, as is frequently the case, the inflammation lingers long under the lower eyelid, an ointment composed of one drachm of red precipitate ointment and seven of lard should be applied every night to the edge of the lid, immediately within the lashes, by means of a small camel-hair brush. The above remedies should produce a slight smarting, lasting a few minutes only, each time they are applied; if they cause much or lasting pain, they should be still further diluted.

The redness by which this simple inflammation is characterized is of a bright scarlet hue, and is spread pretty evenly over the whole surface of the eyeball; the vessels can be readily seen with the naked eye, and can be made to move by rubbing the eyelid gently over the surface of the eye. Should the redness be of a pale pink colour, produced by vessels so minute as only to be discerned through a powerful lens, arranged in the form of a ring round the cornea, and not removeable by pressure, inflammation of the deeper seated textures of the eye is indicated, and the disease is no longer amenable to domestic remedies. It should be remembered further, that the two forms of injection may co-exist, and that the pink ring, though present, may be completely concealed by the more superficial and florid vascularity, and this is more or less the case in many of the more serious inflam-

mations of the eye; careful search should therefore be made for other symptoms indicative of danger. Severe pain is always a suspicious symptom, and the more so when it occurs in paroxysms, and is seated in the bone of the brow or temple. The iris should be carefully examined, and compared with that of the healthy eye; if it present the slightest change of colour, or if the pupil have lost its perfectly circular form, and clear, sharp margin, it may be safely concluded that the disease is of a formidable character. The same may be said if the cornea has become dim and hazy, like a piece of glass which has been breathed upon; or when, with a thick, mattery discharge, its margin is surrounded by a prominent ring or wall of swollen conjunctiva. This last symptom indicates one of the most rapidly destructive diseases to which the eye is liable, twenty-four or thirty hours being sometimes sufficient for the total loss of the organ; not a moment therefore, when it is observed, should be lost in sending for medical assistance, pending the arrival of which, the nitrate of silver drops may be used, and the eyes covered with rags wet with the alum lotion, rendered as cold as possible by ice, if it can be procured.

Conjunctivitis, or inflammation of the conjunctiva, is common among newly-born infants, and furnishes the Blind Asylums with a large proportion of their inmates. The moment the slightest discharge is perceived, the alum lotion should be assiduously used, at least once every hour, great care being taken to avoid any pressure on the eyeball in opening the eye; but it is only the slightest cases that can be safely intrusted to domestic management.

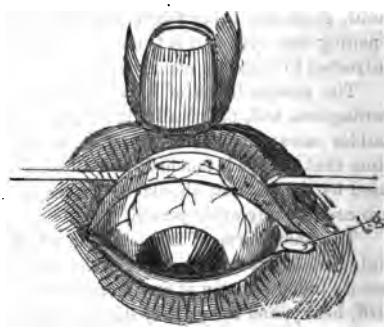
The severer forms of inflammation of the conjunctiva are highly contagious, and, practically, it is safer to take the same view even of milder cases; the hands, therefore, should be carefully washed each time that the eye is touched; and all handkerchiefs, towels, or sponges used by the patient, should be soaked in boiling water before they are used by any other person.

The same form of inflammation which sometimes remains in the lining membrane of the lower eyelid after an acute attack, frequently occurs independently of any more active symptoms. The eyelids feel stiff, heavy, and itchy; they stick together on awaking in the morning, and can only be opened after patient bathing, and frequently at the expense of tearing out the eyelashes. Reading, writing, or minute work of any kind, renders the eyes weak and irritable, and bright light, whether artificial or natural, is painful; the increased and viscid secretion of the conjunctiva is smeared over the cornea, especially at

night, rendering the eye dim, and giving a candle an appearance as if it were surrounded by a large halo, which disappears when the eye is rubbed. Such cases are best treated by the alum lotion and the ointment already described, together with great attention to cleanliness, and avoidance of minute work, especially by artificial light. As there is almost invariably some disturbance of the digestive organs, small doses of rhubarb and bicarbonate of soda, five grains of the former and ten of the latter, may be taken night and morning, according to the effect produced upon the bowels; and wine and spirits should be abstained from, as they invariably aggravate the symptoms.

INTRUSION OF SMALL BODIES, such as insects or minute particles of dust or gravel, into the eye, is a very common accident. These are generally soon washed out by the increased secretion of tears which they excite, aided by the motion of the eyelids; but sometimes they are not so easily got rid of, and as they occasion great pain, it is important to know how they may be removed. If visible, this is readily done with the corner of a handkerchief, or still better, with a camel-hair brush.

It often happens, however, that while there can be no doubt that they are still in the eye, nothing whatever can be seen; in such cases we may be confident of finding them adhering to the under surface of the upper eyelid, immediately in front of the cornea, and in order to bring them into view, it is necessary that the lid be inverted, as in the wood-cut, or turned inside out. This little operation may be done in the following way:—Some of the central eyelashes should be firmly seized between the finger and thumb of the left hand, and the lid pulled downwards, and slightly away from the eye; the end of a knitting-needle, a probe, the writing end of a patent pencil-case, or any small instrument, should then be applied about three-eighths of an inch from the border of the lid, and gently pressed downwards, while with



the left hand the lid is folded upwards over it. If this be done rapidly and gently, not the slightest pain is occasioned, and it is rendered much more easy if the patient refrains from resisting by forcibly attempting to close the eye. When inverted, the little speck of dust may be seen adhering to the surface of the eyelid, and may be removed with the corner of a handkerchief, or a camel-hair brush. If the search is still fruitless, which is seldom the case, and if proper assistance cannot be procured, the upper eyelid should be pulled gently forwards from the eye by one person, while an assistant directs a stream of tepid water under it by means of a syringe, taking great care not to touch the eye with the nozzle of the instrument. These and all other manipulations about the eye should be conducted with extreme gentleness, as rough usage not only increases the irritation it is designed to alleviate, but may be productive of serious inflammation. Female fingers, when available, will be found more soft and delicate than the horny digits of the rougher sex.

Workers in stone and in metals frequently get small particles in the eye, which they term "fires," and which, instead of resting upon the eyelids, are firmly fixed upon the surface of the cornea. These "fires" are minute chips of the metal, generally in a state of fusion, sparks which are struck off red-hot by the chisel or file; in some instances they rest merely upon the surface of the cornea, and may be removed by a steady hand by means of a small metal spatula, such as is commonly used as a toothpick; the upper eyelid should be carefully fixed, and the instrument should be applied with the lightest possible touch. Very frequently, however, they are deeply buried in the substance of the cornea, and so firmly fixed that it is often a matter of difficulty to remove them, even with the appropriate instruments. Nothing can be more dangerous than the attempts which are frequently made by workmen to remove these particles for themselves with the point of a penknife or other coarse instrument, and many eyes are annually lost in consequence of such rough treatment. On the other hand, equally disastrous results may follow from leaving them where they are, and at the best, much pain, and a small opacity from the rusting of the metal, and the ulceration caused by its presence. If proper assistance, therefore, cannot be procured, a solution of sulphate of copper (blue stone), of the strength of two grains of the salt to one of water, should be applied to the eye by means of a small eye-bath, and retained there, or repeated from time to time, until the particle of metal has been dissolved. This method has only been recently proposed, but is said to have succeeded in several

instances; there can be no question that it is much safer than the rough use of instruments by unpractised hands.

Mothers frequently receive a scratch on the cornea from the sharp little nails of their infants—an accident which, trivial as it may appear, causes excessive pain. If the eye be carefully examined in different lights, a minute abrasion of the outer investment may be detected, by which the deeper and sensitive layers are exposed to the friction of the eyelids in their incessant motions, so that the pain is incessant. The best application, in such cases, is a drop of pure and perfectly fresh castor-oil, which fills up the little furrow to the level of the surrounding parts, and protects the sensitive surface from friction; other oils might answer the purpose, but from its viscidity, and unirritating qualities, castor-oil should be preferred when it can be procured.

Accidents to the cornea, of whatever sort, occurring to persons in a weak state of health, especially when this has been occasioned by intemperance and debauchery, are very liable to be followed by abscess, penetrating through the whole thickness of its texture; the iris then protrudes through the opening, the pupil is closed, and the sight of the eye is destroyed, or so much impaired that it can only be rendered available by an operation. Such persons, therefore, should be particularly careful when they meet with injuries, and should place little confidence in their own medical skill.

Bleeding.—So far back as history throws any light on the subject, bleeding has been employed for the cure of disease, both in the most civilized and the most barbarous countries; and it was not till the present generation of surgeons sprang up that it received any material check. For the last twenty years the practice has been continually on the decline; and of late the feeling against it has so gained ground, that many surgeons in large practice never bleed at all, and the others only in very rare instances. To bleed as men used to bleed half-a-century ago would soon injure the most eminent reputation. Perhaps in this respect men have rushed, as they are wont to do, from one extreme into the opposite.

We are told that it is no longer the fashion—the practice of the day—to bleed; that in consequence of our less active and more luxurious habits, we can no longer bear depletion as our forefathers did. But this is very doubtful; for the men of the present day unquestionably enjoy better health, and perhaps more stamina, than those at any previous age. The abuse of the lancet rather arose from ignorance of true pathology, and of the evils that resulted from so much loss

of blood, as well as from want of better means of controlling disease. There is no longer any doubt that many patients were sacrificed to phlebotomy, as it was pedantically called, and that others were in no way benefited by it. And here I must most earnestly entreat my readers to discard from their minds the fallacy that, as soon as an unfortunate person falls from his horse, or drops down in a fit, it is necessary to bleed him; for in the majority of cases, a surer means could not be found of dispatching the victim to his grave.



When really necessary, the patient should be bled at the bend of the elbow; and the surgeon having assured himself by feeling that there is no artery pulsating below the vein he chooses, a bandage is tied tight above the elbow, in the manner represented in the plate. The patient should then grasp a stick, or the back of a chair; and when the vein begins to swell, it should be opened with a sharp slender lancet, as in the cut. An



oblique cut, about one-third of an inch long, should be made across it. The thumb of the left hand is placed on the vein, just below the spot where it is opened, to prevent the vessel from rolling. If no

blood flows, probably the skin only has been divided, and the blue vein may be seen between the cut edges; if so, it must be opened by a second cut in the same direction. The thumb is then removed, and the blood allowed to flow. It is very rarely that more than half a pint, to a pint, requires to be drawn. To stop the flow of blood, the bandage is removed and the thumb placed on the wound, which is then carefully cleansed; a pad of lint is placed on it, and secured by another bandage, as in the cut.



Vaccination is not always so carefully performed as it might be. The lymph should be previously moistened with warm water; and then the skin being stretched quite tight, three or four punctures pointing downwards should be made in the arm. The bleeding is then gently stopped with cold water; and when it has ceased, the lymph should be inserted, and carefully retained there for full five minutes. Both arms should be vaccinated, and three or four good pustules secured. It sometimes happens that one vaccinator fails and another succeeds, simply from performing the operation with more care.

Tooth-drawing should never be attempted by any person who has not been practically instructed in the art. If the force be improperly applied, a moderate strength will shatter the tooth, or break it short off, rendering it a difficult task even for a skilful dentist to remove it. The sockets of three or four teeth have been wrenched off *en masse;* and there are records of very serious injury arising from the imprudent attempts of unskillful persons.

The bleeding which sometimes arises after tooth-drawing is best stopped, when very severe, by plugging the cavity firmly with small pieces of lint or linen; the compression being maintained by firmly closing the mouth. Cases, however, have occurred in which this caustic, a red-hot wire, and all means have failed to arrest the hæmorrhage, and the patient died from loss of blood.

Treatment of Drowning.—Many lives are lost in cases of drowning, through the ignorance of those by whom the body is recovered from the water as to the proper steps to be taken to effect resuscitation. The long delay which takes place before medical aid can be procured extinguishes for ever the feeble spark of life, which might have been fanned into flame, had immediate assistance been at hand. It is highly important, then, that every one should have clear ideas as to what is best to be done in such emergencies, so that not a moment

may be lost; and at no time is this knowledge more likely to be called into requisition than in the summer months, when every pool and stream is thronged with bathers, and such accidents are rife. It is scarcely necessary to premise a warning against certain rude and barbarous practices which were formerly in vogue, with the view of freeing the body from the water which is swallowed in drowning, by hanging it up by the heels, rolling it over barrels, &c.; such uncouth treatment could have no other effect than to accelerate and insure death. The first object should be to convey the body to the nearest house as rapidly as possible, sending on a messenger beforehand to direct the preparation of fires, hot water, &c. The manner in which the body is carried is not devoid of importance. If the head be allowed to hang down unsupported, any effort at respiration will be prevented, and the free return of blood from the brain will be impeded; if therefore a shutter, door, or tail-board of a cart cannot be procured, the head must be supported by a person for the purpose. Upon arriving at the house the body should be instantly stripped and placed in a well-warmed bed, or what is better, on a table, sofa, or boards, supported upon tressels, before a large fire, where a temperature of 75 or 80 degrees can be maintained, and surrounded with hot bottles or heated bricks wrapped in flannel; care should be taken to ascertain that these are not overheated, as serious burns have been caused by carelessness on this point. The mouth and nostrils should then be carefully cleansed from the slime and mucus with which they are clogged, and which would prevent the entrance of air into the wind-pipe, and then artificial respiration should be instantly commenced, bearing in mind that this is the most important of all the remedies that can be adopted, and that the sooner it is commenced, the less time that is lost in preliminary preparations, the more likely it is to be successful. For this purpose it is sufficient to compress forcibly the ribs and abdomen, so as to expel the air from the lungs; upon remitting the pressure the ribs again expand by their own elasticity, and a fresh portion of air is drawn in. This should be done steadily and regularly about twenty-five times in a minute, and in the meantime a form of bandadge recommended by Dr. Kaye may be prepared, by which the process may be carried on with less fatigue and greater regularity. Take a piece of blanket, strong sheet, or any strong cloth that can be most readily procured, six feet long and eighteen inches wide; tear it lengthwise into six strips at each end, each three inches in width, and two feet long; place the untorn portion below the back, and cross the strips over the chest

and abdomen, interlacing them with each other: the stripes are now to be gathered into a bundle at each side, and seized by two persons, who, by alternately pulling and relaxing, imitate as closely as possible the natural respiratory motions. It may be well, at first, to insure the patency of the windpipe, by opening the mouth and pulling the tongue forcibly forwards; to prevent its slipping, it should be held by a towel or handkerchief. Of so much importance is artificial respiration, that when the body has been long in the water it should be practised immediately on recovering it, especially when there is no house close at hand. At the same time the legs and arms should be briskly rubbed with the naked hand or a piece of warm flannel, to promote the capillary circulation; this, which is rather a fatiguing duty, may be performed by relays of assistants, who should remain in another room when not employed, as it is important to have the air as pure and uncontaminated as possible. As soon as the patient is able to swallow, a tea-spoonful of wine, or brandy and water, may be given; this should be done with caution, as if hastily attempted it may enter the windpipe; when the full power of swallowing has returned, stimulants may be given more freely. It is advantageous, sometimes, to commence the treatment by a large clyster of warm spirits and water. These measures should be actively persevered in for at least six hours, as several instances are on record where such perseverance has been rewarded by the recovery of the patient, even when the length of the immersion might have induced the opinion that any attempt would be hopeless.

Treatment of Hanging.—The first thing to do when a person is found hanging is to cut him down, remove the cord from the neck, and dash cold water freely upon the head, face, and chest. Bleed, if blood will flow; apply hot turpentine to the legs and chest; and treat as directed in the preceding article upon drowning. A person who has been suspended more than a very few minutes can be seldom restored.

Choking.—When a person has a fish-bone in the throat, press the forefinger upon the root of the tongue so as to induce vomiting; if this does not succeed, let the patient swallow a large piece of bread or potato; if still unrelieved, send for the surgeon.

Suffocation from Noxious Gasses, &c.—Remove to the fresh air; dash cold water on the face, neck, and breast; keep up the warmth of the body; apply mustard poultices or hot turpentine to the soles of the feet and calves of the leg; and treat generally as in drowning.

CHAPTER XXX.

MISCELLANEOUS NOTICES.

DRESSINGS are substances usually applied to parts for the purpose of soothing, promoting their re-union when divided, protecting them from external injuries, as a means of applying various medicines, to absorb discharges, protect the surrounding parts, and securing cleanliness.

Certain instruments are required for the application of dressings in domestic surgery, namely, scissors, a pair of tweezers, or simple forceps, a knife, needles and thread, a razor, a lancet, a piece of lunar caustic in a quill, and a sponge.

The materials required for dressings consist of lint, scraped linen, carded cotton, tow, ointments spread on calico, adhesive plaster, compresses, pads, poultices, old rags of linen or calico, and water.

The following rules should be attended to in applying dressings:—1. Always prepare the new dressing before removing the old one. 2. Always have hot and cold water at hand, and a vessel in which to place the foul dressings. 3. Have one or more persons ready to assist, and tell each person what they are to do before you commence—it prevents confusion; thus one is to wash out and hand the sponges, another to heat the adhesive plaster, or hand the bandages and dressings, and, if requisite, a third to support the limb, &c. 4. Always stand on the outside of a limb to dress it. 5. Place the patient in as easy a position as possible so as not to fatigue him. 6. Arrange the bed *after* changing the dressings; but in some cases you will have to do so before the patient is placed on it. 7. Never be in a hurry when applying dressings; do it quietly. 8. When a patient requires moving from one bed to another, the best way is for one person to stand on each *side* of the patient, and each to place an arm behind his back, while he passes his arms over their necks; then let their other arms be passed under his thighs, and by holding each others' hands the patient can be raised with ease, and removed to another bed. If the leg is injured a third person should steady it, and if the arm, the same precaution should be adopted. Sometimes a stout sheet is passed under the patient, and by several people holding the sides, the patient is lifted without any fatigue or much disturbance.

LINT may be made in a hurry, by nailing the corners of a piece of old linen to a board, and scraping its surface with a knife. It is used either alone or spread with ointment. Scraped lint is the fine filaments from ordinary lint, and is used to stimulate ulcers and absorb discharges; it is what the French call *charpie.*

SCRAPED LINT is made into various shapes, for particular purposes.



For example, when it is screwed up into a conical shape, as in the cut, it is called *a tent*, and is used to dilate fistulous openings, so as to allow the matter to escape freely, and to plug wounds, so as to promote the formation of a clot of blood, and thus arrest bleeding. When it is rolled into little balls they are called *boulettes*, and are used for absorbing matter in cavities or blood in wounds. Another useful form is made by rolling a mass of scraped lint into a long roll and then tying it in the middle with a piece of thread; the middle is then doubled and pushed into a deep seated wound so as to press upon the bleeding vessel, while the ends remain loose and assist in forming a clot; or it is used in deep-seated ulcers to absorb the matter and keep the edges apart.



This form is called the *bourdonnet.* Another form is that called the *pelote*, which is merely a ball of scraped lint tied up in a piece of linen rag, as in the cut. This is used in the treatment of protrusion of the navel in children.

CARDED COTTON is used as a dressing for superficial burns, and care should be taken to free it from specks, as flies are apt to lay their eggs there, and generate maggots.

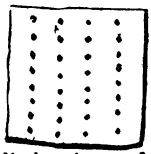
Tow is chiefly employed as a padding for splints; as compresses; and also as an outer dressing where there is much discharge from a surface.

OINTMENTS are spread on calico, lint, or even thin layers of tow, by means of a knife; they should not be too thickly spread.

ADHESIVE PLASTER is cut into strips, ranging in width according to the nature of the wound, &c., but the usual width is about three-quarters of an inch. Isinglass plaster is not so irritating as diachylon, and is more easily removed.

COMPRESSES are made of pieces of linen, calico, lint, or tow, doubled or cut into various shapes. They are used to confine dressings in their places, and to apply an equal pressure over parts.

They should be free from darns, hems, and knots. Ordinary compresses are square, oblong, and triangular. The pierced compress, as in the cut, is made by folding up a square piece of linen five or six times on itself, and then nicking the sides with the scissors, so as to cut out small pieces. It is then opened out, and spread with ointment. It is applied to discharging surfaces, for the purpose of allowing the matter to pass freely through the holes, and is frequently covered by a thin layer of tow. Compresses are also made in the shape of the Maltese cross, and half a cross, sometimes split singly, and at other times doubly; or they are graduated by placing square pieces of folded cloth on one another, so arranged that they decrease in size each time. These are used for keeping up pressure upon certain parts.



PADS are made by sewing tow inside pieces of linen, or folding linen and sewing the pieces together. They are used to keep off pressure from parts, such as that caused by splints in fractures.

POULTICES are usually made of linseed-meal, oatmeal, or bread, either combined with water or other fluids; sometimes they are made of carrots, charcoal, potatoes, yeast, linseed-meal, &c.; but the best and most economical kind of poultice is a fabric made of sponge and wool felted together, and backed by Indian-rubber. It is called "Markwick's Patent Spongio-piline," and gained a prize medal at the Great Exhibition,—no small recommendation for its use. The method of using this very clean and excellent poultice is as follows:—A piece of the material of the required form and size is cut off, and the edges are pared or bevelled off with a pair of scissors, so that the caoutchouc may come in contact with the surrounding skin in order to prevent evaporation of the fluid used; for, as it only forms the vehicle, we can employ the various poultices generally used with much less expenditure of time and money, and increased cleanliness. For example, a vinegar poultice is made by moistening the fabric with distilled vinegar; an alum poultice, by using a strong solution of alum; a charcoal poultice, by sprinkling powdered charcoal on the moistened surface of the material; a yeast poultice, by using warmed yeast, and moistening the fabric with hot water, which is to be well squeezed out previous to the absorption of the yeast; a beer poultice, by employing warm porter dregs or strong beer as the fluid; and a carrot poultice, by using the expressed and evaporated liquor of boiled carrots. The material costs about one-farthing a square inch. As a fomentation it is most invaluable, and by moistening the material

with compound camphor liniment or hartshorn, it acts the same as a mustard poultice. It is a real blessing to the poor, who cannot afford to waste "the staff of life" in making poultices.

COLD WATER is used as a lotion to keep the parts cool, or as a dressing to unhealthy ulcers; it is applied by means of lint dipped in it and laid over the part, so as to allow the water to evaporate; while sometimes the lint is covered with a piece of oiled silk to prevent evaporation.

FOMENTATIONS consist of pieces of flannel or spongio-piline, dipped in hot water, wrung out, applied as hot as can be borne, and frequently changed.

BANDAGES are stripes of calico, linen, flannel, muslin, elastic-webbing, bunting, or some other substance of various lengths, free from hems or darns, soft and unglazed. They are better after they have been washed. Their uses are to retain dressings, apparatus, or parts of the body in their proper positions, support the soft parts, and maintain equal pressure.

Bandages are simple and compound; the former are simple strips rolled up tightly like a roll of ribbon. There is also another simple kind which is rolled from both ends,—this is called a double-headed bandage. The compound bandages are formed of many pieces.

Bandages for the head should be two inches wide and five yards long; for the neck, two inches wide and three yards long; for the arm, two inches wide and seven yards long; for the leg, two-and-a-half inches wide and seven yards long; for the thigh, three inches wide and eight yards long; and for the body, four or six inches wide and ten or twelve yards long.

To apply a single-headed bandage, lay the outside of the end next to the part to be bandaged, and hold the roll between the little, ring, and middle fingers, and the palm of the left hand, using the thumb and fore finger of the same hand to guide it, and the right hand to keep it firm, and pass the bandage partly round the leg towards the left hand. It is sometimes necessary to reverse this order, and therefore it is well to be able to use both hands. Particular parts require a different method of applying bandages, and therefore I shall describe the most useful separately; and there are different ways of putting on the same bandage, which consist in the manner the folds or turns are made. For example, the circular bandage is formed by horizontal turns, each of which over-laps the one made before it; the spiral consists of spiral turns; the oblique follows a

course oblique or slanting to the centre of the limb; and the recurrent folds back again to the point whence it started.

Circular bandages are used for the neck, to retain dressings on any part of it, or for blisters, setons, &c.; for the head, to keep dressings on the forehead or any part contained within a circle passing round the head; for the arm, previous to bleeding; for the leg, above the knee; and for the fingers, as in the cut.

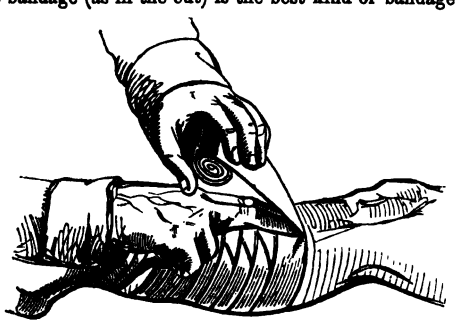
To confine the ends of bandages, some persons use pins; others slit the end for a short distance, and tie the two strips into a knot as in the cut; and some use a strip of adhesive plaster, but this is a dirty method. Always place the point of a pin in such a position that it should not be likely to prick the patient, or the person dressing the limb, or be likely to draw out by using the limb; therefore, as a general rule, turn the head of the pin from the free end of the bandage, or towards the upper part of the limb.



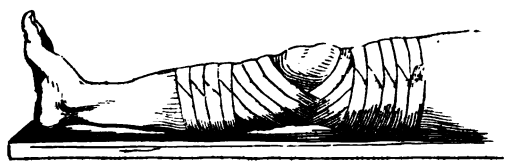
The oblique bandage is generally used for arms and legs to retain dressings.

The spiral bandage is generally applied to the trunk and extremities; but it is apt to fall off even when very carefully applied; therefore we generally use another, called the recurrent.

The recurrent bandage (as in the cut) is the best kind of bandage that we can employ for general purposes. The method of putting it on is as follows:—Apply the end of the bandage that is free, with the outside of it next to the skin, and hold this end with the finger and thumb of the left hand, while some one supports the heel of the patient; then with the right hand pass the bandage over the piece you are holding, and keep it crossed thus, until you can place your right forefinger upon the spot where it crosses the other bandage,



where it must be kept firm. Now hold the roll of the bandage in your left hand, with the palm looking upwards, and taking care to keep that part of the bandage between your right forefinger, and the roll in your left hand quite slack; turn your left hand over, and bring the bandage down upon the leg as in the cut; then pass the roll under the leg towards your right hand, and repeat this until the leg is bandaged up to the knee, taking care not to drag the bandage at any time during the process of bandaging. When you arrive at the knee, pass the bandage round the leg in circles just below the knee, and pin it as usual. Bandaging is very easy, and if you once see any one apply a bandage properly, and attend to these rules, there will not be any difficulty; but bear one thing in mind, without which you will never put on a bandage even decently; that is, never to drag or pull at a bandage, but make the turns while it is slack, and you have your right forefinger placed upon the point where it is to be folded down. When a limb is properly bandaged, the folds should run as in the annexed cut.



A bandage for the chest is always placed upon the patient while in a sitting posture; and it may be put on in circles or spirally. It is used in fractures of the ribs, to retain dressings, and after severe contusions.

A bandage for the belly is placed on the patient spirally, carrying it from above downwards. It is used to compress the belly after tapping in dropsy, after child-birth, or to retain dressings.



The hand is bandaged by crossing the bandage over the back of the hand.

For the head, a bandage may be circular, as *b* in the cut; or spiral, as *a* in the same figure; or both. In applying the one, commence by placing one circular turn just over the ears; then bring it down from left to right, and round the head again so as to alternate a spiral with

a circular turn. It is used to retain dressings on the head, or over the eye; but this form soon gets slack. The circular bandage is the best, crossing it over both eyes.



For the leg and foot.—Place the end just above the outer ankle, and make two circular turns to prevent its slipping; then bring it down from the inside of the foot over the instep towards the outer part; pass it under the sole of the foot, and upwards and inwards over the instep towards the inner ankle, then round the ankle, and repeat again, so as to make it as in the annexed figure.

As it sometimes happens that it is necessary to apply a bandage at once, and the materials are not at hand, it is desirable to know how to substitute something else that any one may apply with ease. This is found to be effected by handkerchiefs, and an experienced surgeon (Mr. Mayor) has paid great attention to the subject, and brought it to much perfection. It is to him, therefore, that I am indebted for most of these hints.

Any ordinary handkerchief will do; but a square of linen folded into various shapes answers better. The shapes generally required are as follow:—The triangle, the long square, the cravat, and the cord.

The triangular handkerchief used for the head is made by folding it from corner to corner. Place the base round the head, and the short part hanging down behind; then tie the long ends over it.

The long-square is made by folding the handkerchief into three parts, or double it once upon itself. Used as a bandage to the ribs, belly, &c. If one handkerchief is not long enough, sew two together.

The cravat is folded as usual with cravats. It is used as a bandage for the head, arms, legs, feet, neck, &c.

The cord is used to compress vessels, being, in fact, a temporary tourniquet when a knot is made in it, and placed over the vessel to be compressed. It is merely a handkerchief twisted in its long diameter.

Sometimes it is necessary to apply two or more handkerchiefs, as in a broken collar-bone, or when it is necessary to keep dressings under the arm. It is applied by knotting the two ends of one hand-

kerchief together as in the cut, and passing the left arm through it, then passing another handkerchief under the right arm, and tying it as represented in the figure. By this means we can brace the shoulders well back, and the handkerchief will press firmly over the broken collar-bone; besides, this form of bandage does not readily slip or get slack, but it requires to be combined with the sling, in order to keep the arm steady.



When a woman has an inflamed breast that requires support, or dressings to be kept to it, tie two ends of the handkerchief round her neck, and bring the body of it over the breast, and pass it upwards and backwards under the arm of that side, and tie the ends of those around the neck.



An excellent sling is formed by placing one handkerchief around the neck, and knotting the two ends over the breast-bone, as in the cut; then placing the other in triangle under the arm, to be supported with the base near to the hand, tie the ends over the other handkerchief, and pin the top to the other part after passing it around the elbow.

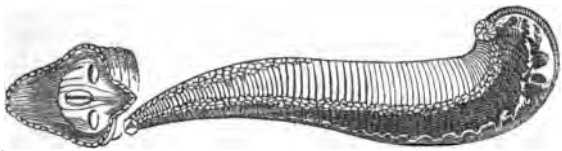
Cupping is performed by throwing a piece of paper dipped into spirit of wine, and ignited into a wine-glass, and placing it over the part, such as the neck, temples, &c. This is dry cupping. It draws the flesh into the glass, and causes a determination of blood to the part, which is useful

in headache, or many other complaints. This is an excellent method of extracting the poison from wounds made by adders, mad dogs, fish, &c.



Ordinary Cupping is performed the same as dry cupping, with this exception, that the part is scarified or scratched with a lancet, so as to cause the blood to flow. Then the glass is placed over it again with the lighted paper in it, and when sufficient blood has been taken away, then the parts are sponged, and a piece of sticking plaster applied over them.

The Leech used for medical purposes is called the *Hirudo medicinalis*, to distinguish it from other varieties, such as the *H. sanguisuga*,



or horse-leech, and the *H. provincialis*, or Lisbon leech. It varies from 2 to 4 inches in length, and is of a blackish brown colour, marked on the back with six yellow spots, and edged with a yellow line on each side. Formerly leeches were supplied by Lincolnshire, Yorkshire, and other fenny counties; but latterly most of the leeches are procured from France, where they are now becoming scarce.



When leeches are applied to a part, it should be thoroughly freed from down or hair by shaving, and all dirt, liniments, &c. carefully and effectually cleaned away by washing. If the leech is hungry it will soon bite; but sometimes great difficulty is experienced in getting the animal to fasten. When this is the case, roll the leech in a little porter, or moisten the surface with a little blood or milk, or sugar and water. Leeches

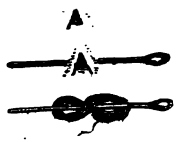
may be applied by holding them over the part with a piece of linen cloth, or by means of a glass, as in the cut.

When applied to the gums, care should be taken to use a leech glass, as they are apt to creep down the patient's throat; a large swan's quill will answer the purpose of a leech glass. When leeches are gorged, they will drop off themselves; never *tear* them off from a person, but just dip the point of a moistened finger in some salt and touch them with it.

Leeches are supposed to abstract about two drachms of blood, or six leeches draw about an ounce; but this is independent of the bleeding after they have come off, and more blood generally flows then than during the time they are sucking.

After leeches come away, encourage the bleeding by flannels dipped in hot water and wrung out dry, and then apply a warm spongio-piline poultice. If the bleeding is not to be encouraged, cover the bites with rag dipped in olive oil, or spread with spermaceti ointment, having previously sponged the parts clean.

When bleeding continues from leech bites, and it is desirable to stop it, apply pressure with the fingers over the part, or dip a rag in a strong solution of alum and lay it over them, or use the tincture of sesquichloride of iron, or apply a leaf of matico to them, placing the under surface of the leaf next to the skin, or touch each bite with a finely-pointed piece of lunar caustic; and if all these tried in succession fail, pass a fine needle through a fold of the skin so as to include the bite, and twist a piece of thread round it, as in the figure. Be sure never to allow any one to go to sleep with leech bites bleeding, without carefully watching them; and never apply too many to children.



After leeches have been used they should be placed in water, containing 1·6 per cent. of salt, which facilitates the removal of the blood they contain; and they should afterwards be placed one by one in warm water, and the blood forced out by *gentle* pressure. The leeches should then be thrown into fresh water, which is to be renewed every twenty-four hours; and they may then be re-applied after an interval of eight or ten days; a second time they may be disgorged, after which they should be placed in reservoirs made of millstones, covered with Roman cement, and filled with water, which should be frequently changed. The bottom of the reservoir should be covered with a layer of clay, 14 inches deep, in which several aquatic plants

(the typha, and iris pseudo-acorus, for example), are allowed to grow. Instead of the reservoir you may use a tub with lumps of clay moistened with water, and moss, and stones; they are thus enabled to clean themselves from the slime which covers their bodies and kills them.

If a leech is accidentally swallowed, an emetic of salt and water is to be exhibited.

Scarification is useful in severe contusions and inflammation of parts. It is performed by scratching, or slightly cutting through the skin with a lancet, holding the lancet as a pen when ruling lines upon paper.

Blisters may be allowed to remain on in an adult for about twelve hours, and are best applied at bed-time. When they are employed in children, from four to six hours will be long enough to effect their purpose, and a piece of tissue paper may closely cover the surface of the blistering plaster. In dressing a blister, care must be taken, in letting out the fluid with a pair of pointed scissors, not to remove the external layer of skin which has been raised, otherwise the pain will be much increased from exposure of the tender true skin to the air. A mild form of blister, or rather irritant, is that of

Mustard, made by stirring flour of mustard and water together; the addition of vinegar appears to diminish its activity—at least this is the case with brown mustard. Sometimes the mustard may be diluted with an equal part of linseed meal, and, in other cases, such as those of children, a teaspoonful or two of mustard may be added to a bread poultice. As a general rule, it should not remain on longer than ten or fifteen minutes; in the child, five minutes will suffice.

Application of Cold.—This may be used to the head in inflammatory affections of the brain and other cases, either in the form of ice or ice cold water. When ice is used, a bladder may be one-third filled with pounded ice, and the air is then carefully pressed out of the remainder of the bladder, which is then to be securely tied. This will conveniently fit the head. Instead of the bladder, a Mackintosh water cushion may be filled to one-half of its capacity with ice cold water, and the patient's head placed upon it. The water can, in this way, be readily changed. The linen cloth, which is commonly used with the ice cold water, should be light, and frequently renewed. In all severe cases the head must be shaved before cold is applied.

In cases where ice or snow cannot be procured, a freez-

ing mixture, consisting of the following substances, may be employed:—

Sal ammoniac, . . .	5 ounces.
Nitre, ...	5 ounces.
Water, ...	16 ounces.

BATHS.—The *Cold Bath* ranges from about 50° Fahr. to 70° Fahr. It acts by producing a nervous impression or shock, by cooling the surface of the body, and subsequently by the occurrence of the reaction or glow. If the person is weak, this reaction may not occur, and then the use of the cold bath must be given up. As the cold bath produces injurious effects, when immersion is continued for too long a time, such as headache, drowsiness, difficult breathing, and cramps, the individual using it, in order to increase the tone of the system, should be careful not to remain in the water longer than a few minutes. The cold bath can seldom be taken by a person in delicate health before breakfast; for there may not be strength to produce reaction. It is better to employ it after breakfast, but not too soon after taking food. It should be followed by active walking exercise.

The *Temperate Bath* ranges from 70° to 85° Fahr. It is a good preparatory measure to the cold bath.

The *Tepid Bath* has a temperature between 85° and 92° Fahr. It may be used at noon. One pound of salt to every pailful of water will make a bath of the strength of sea water. This addition will greatly improve the efficacy of the tepid bath.

The *Warm Bath* ranges from 92° to 98° Fahr.

The *Hot Bath* ranges from 120° to 160° Fahr.

These and all other baths had better be employed by the invalid only when recommended by his medical adviser, as there are cases in which the use of them would be injurious. The warm bath should not be used during the time digestion is going on. The patient should remain in the bath about twenty minutes.

The *Vapour Bath* differs according to the way of employing it, either by immersing the whole body in the vapour, so that this is inhaled, or by inclosing the body in a chamber or box, to which aqueous vapour is conveyed by a pipe connected with a boiler, so that the head is not exposed to the vapour, which therefore is not breathed. The heating powers of the vapour bath,

whether it is breathed or not, have been thus stated by Dr. Forbes :—

	NOT BREATHED.	BREATHED.
Tepid bath, ...	96° to 106°	90° to 100°
Warm bath, ...	106° ,, 120°	100° ,, 110°
Hot bath, ...	120° ,, 160°	110° ,, 130°

Another mode of giving the vapour bath is the following :—The bather, undressed, is seated on a chair, and a pail of hot water is placed near him; then the patient, the chair, and the bucket or pail are enveloped by a blanket, either over his head, when it is intended that he should inspire the vapour, or pinned around his neck, when it is not to be inhaled. The body is soon enveloped in warm vapour, and one or two hot bricks may be thrown into the pail, should it be found necessary to increase the evolution of vapour; but this must be carefully done, so as not to run the risk of scalding the patient.

Cold Affusion.—When water, at a temperature of from 32° to 60° Fahr., is poured over the body of the patient, it produces so powerful an effect on the system that the superintendence of a medical man will be required. When applied to the head only, as is often done to children, the head should be held over a basin, while water squeezed from a large sponge is allowed to fall from some height upon it. When it descends drop by drop upon the head, it has a powerful effect both in cooling that part, and in producing an impression on the nervous system.

Cold and Tepid Sponging may be often employed with advantage where affusion would not be tolerated. It is very useful in abating heat of the surface; if the individual is very debilitated, a little spirit may be added to the water.

Shower Bath.—This is best employed on rising in the morning. If the patient is weak, the temperature of the bath should not be quite cold. Warm water should be put into the lower part of the bath for the feet.

Douche Bath.—In this form of bath water is poured on the patient in a continuous stream from a jug held at some height above his head. The effect is very great if the height be considerable; but is much moderated if held at a small distance, and if the water used be not quite cold.

LAVEMENTS or GLYSTERS differ in their effect according to the quantity as well as the kind of liquid employed. The habit of constantly

resorting to them, as a means of opening the bowels, is bad. When required to operate in this way, the quantity of fluid for an infant is about one ounce; for a child, one to five years old, from three to four ounces; for a youth, from six to fifteen years, from five to eight ounces. The elastic bottle is very convenient for this purpose. The ordinary enema syringes, commonly sold in the shops, answer well for adults.

CHAPTER XXXI.

SICK-ROOM MANAGEMENT.

THE BED-ROOM.—The chief points of importance, in determining the situation of the room to be occupied by a sick person, are, that it be of size sufficient to allow free ventilation, without exposing the patient to currents of cold air; that there should be a fire-place in it, not closed by a chimney board; and that the windows should open from the top. It should have a northern aspect, in order to avoid the mid-day sun; and be so situated as to be out of the way of all noise both of the house and of the street.

The importance of quietude is constantly witnessed by those who have much to do with the sick. The shock following any sudden noise in certain states of the brain, and in commencing delirium, is sometimes very severe; while the agitation created by objects of fear, whether real or imaginary, is equally injurious to the patient. The weakened nervous system does not bear even slight noises; and a heavy footstep, or even rustling the leaves of a book, or much whispering, cause restlessness and irritability, almost analogous to that condition of the brain which exists in the insane, in whom, according to Dr. Conolly, the accidental "slamming" of a door is sufficient to disarrange a whole ward for the day.

All articles of furniture, which the patient does not require, had better be removed; and articles of clothing and damp linen should never be allowed to remain in the room. During the prevalence of certain diseases, to which a moist atmosphere is favourable, as cholera, even the vessels which contain water for the patient's use had better only remain filled during the time they are likely to be required; as the evaporation constantly taking place from the surface of water renders the air of the room less dry than is desirable.

A French bedstead, without curtains, is ordinarily the best for the use of an invalid, and in some cases it is desirable to have another placed in an adjoining room, to which the patient may be removed as occasion requires. In regard to the bed on which the patient is to sleep, ordinary mattresses are too hard, especially in diseases attended with considerable debility, and of some duration; and there is this disadvantage in the feather-bed, that it yields too much to pressure, and becomes knotty. Spring-stuffed mattresses are more suitable, as, from their elasticity, they retain their form, and are sufficiently soft. In all lingering diseases, however, attended with considerable emaciation, in which the patient remains long on his back, as in fever, palsy, or consumption, it is one of the most important duties of the nurse to observe frequently the state of the back over the more prominent bones. By changing the position of the patient from time to time, using small cushions filled with air or feathers, and the employment of such means as the medical man may direct, she may generally obviate the effects of pressure, and prevent the occurrence of what are called bed sores. It would be very easy to bring forward cases in which neglect of this point has been followed by fatal consequences, which otherwise would not have ensued, and which a little timely care would have prevented.

A clergyman was lately brought under my notice, whose case strikingly exemplifies the importance of this point. He was suffering from paralysis of the lower half of the body. He was confined to a couch, constructed in such a way that it was unnecessary for him to be removed, even for the performance of any of the natural functions. The nurse neglected to inspect the back. The patient, from his disease, having lost all sensibility of the part, made no complaint. The result was, that the part on which the patient rested mortified, to a considerable extent, before his medical attendant was aware it was in any way affected. The patient sank, not from the disease for which he came under care of his medical attendant, but from the local affection, and in consequence of the neglect of his nurse.

If, however, these attempts to prevent excoriation are not successful, and pain and redness increase rather than diminish, the patient must be placed on the water-bed invented by Dr. Arnott. In using this bed it must be remembered that the head and shoulders have to be supported; and therefore a thin mattress and pillow are required; otherwise, in consequence of its greater weight, the trunk will sink down, while the extremities are tilted upwards. Or the patient may use one of the lately invented water-mattresses, which appears to answer,

although, perhaps, not so completely as Dr. Arnott's bed. A sofa for the use of the patient, during the time the bed is being made, and during convalescence, is, in many cases, a very desirable addition to the furniture of the sick room; and also a reclining arm-chair, capable of being raised or lowered at will, is indispensable, since by its means the patient, as he regains his strength, may be gradually brought from a more or less recumbent to a sitting position.

It is necessary to have two tables in the room—one small and easily moveable, placed by the patient's bedside, and on which may be placed such medicine or nourishment as is required for immediate use; and at the foot of the bed another and larger table, for the various medicines and other matters in occasional use. There should also be one or two drawers set apart for holding lint, bandages, linen rag, or articles rendered necessary by the peculiarities of the case, and also any prescriptions for medicines which the patient may have previously taken.

A bed-table has also been constructed for invalids, which is often very useful in convalescence. It is made so that the foot can be put under the bed, and the top of it project over, so as to hold anything required to be reached easily by the patient, as his food, or a book. The top may be made to rise higher, or be lowered, and is fixed to any height by means of a screw.

It is desirable that there should be also in the room a graduated two ounce and a minim measure; a small half-covered cup, with a spout, to administer fluids to the patient without raising him; a thermometer to regulate the temperature of the room; and a small slate or card, on which may be written any memoranda for the information of the physician of what has taken place during his absence, or any brief note respecting the patient, as the state of the pulse, respiration, &c., which the physician himself may be desirous of making to assist him in estimating the daily, weekly, or monthly progress of the case.

An invalid night-lamp is often required for keeping liquids warm. It may consist of a wire gauze cylinder, containing a lamp that can be moved up and down, and fixed at any particular height from the vessel, holding what is to be warmed placed on the top. This vessel may be a small kettle for heating water for tea, &c.; or, when this is removed, an earthenware vessel may be substituted, in which arrow-root, &c., may be made. The temperature of the room should not exceed, or fall lower than 60° Fahr.; it may, however, be diminished gradually in typhus as the patient recovers, and in cases of hæmorrhage should be reduced as much as possible.

The room must be darkened when the eyes are very sensible to light, and during delirium; and this is best effected by means of a curtain of green calico or linen.

The propriety of carpeting the room will vary in different cases. For example, in cases of typhus fever, it is desirable to remove all woollen articles, and keep the floor as clean as possible. In certain cases of cerebral excitement, a carpet should be placed wherever the attendants must necessarily tread.

VENTILATION.—When we reflect that a healthy man, in one minute, renders from 120 to 130 cubic inches of air unfit for breathing, and that in ventilating a room about 4 cubic feet should be allowed for each man in the same space of time (see "Handbook of Ventilation"), we can form some idea of the importance of a constant supply of fresh air in the sick chamber. It is especially in those acute diseases characterized by a morbid condition of the blood, and capable of being communicated from one person to another by infection, that this is of the utmost importance. And since some of these diseases originate from the impure state of the air in ill-ventilated dwellings, and such a condition is most favourable for their communication to the healthy, it is found, as might be expected, that thorough ventilation and cleanliness are essential to the recovery of the sick, and offer the best security against the spread of the contagion to those who are in attendance upon them. It is proper, especially where the room is of moderate dimensions, not to allow persons to remain long at the bedside; and care should be taken that the patient is not exposed to the currents of cold air which usually pass from the door to the fireplace, and which, in scarlet fever, it is particularly necessary to avoid throughout the entire period of convalescence, as dropsy is not unlikely to occur as a consequence of neglect of this rule.

All evacuations should be removed as soon as possible; and when required to be kept for inspection by the physician, they may be arranged in a separate room, the window of which is kept open. The inspection of them will also be necessary, even if not so directed, should they present any unusual character; for no description will suffice to furnish the precise information required by the medical attendant. In order to get rid of effluvia, a little solution of chloride of lime may be put in the vessels before they are used, or a small quantity of peat-charcoal will have the same effect. Some persons attempt to conceal effluvia by burning feathers, cascarilla, or brown paper, which only act by substituting one strong odour for another, rendering the air of the chamber still more impure. It is far better

to employ linen rags wetted with a solution of nitrate of lead, which, when waved about rapidly, remove the most offensive odours, and at the same time purify the air of the room. An utensil may be employed, consisting of an earthen vessel inclosed in a metallic pan, having a cover fitting into a wide groove, filled with water, by which means the escape of all effluvium is completely prevented. It is also essentially necessary that the sputa, or expectorated matters, should be kept, in all pulmonary affections, for the inspection of the medical attendant; and it will be found convenient to have two vessels, so that one may be in use while the other, containing the matters expectorated within a specified time, is set aside for observation. These vessels should be kept clean; and particular care should be taken that their contents are not discoloured, either by some of the patient's food, medicine, or other extraneous matters getting into the vessel. Serious mistakes have occurred in this way. For example, the mixture of tobacco juice or snuff with the matter expectorated causes it to resemble so nearly that ordinarily brought up in inflammation of the lungs, that this disease has been erroneously supposed to be present in cases in which one of these substances has become mixed with the contents of the vessel.

Cleanliness.—Few nurses are sufficiently careful in regard to the cleanliness of the sick, who require changes of clothing and bed linen oftener than in health; and every day, if the patient can sit up long enough to have it done, the bedclothes should be carried into another room, and thoroughly aired. When the sick person can sit up but a short time, it is well to have two sets of blankets and sheets, one set of which can be used while the other is airing.

When there is not so much debility as to make the effort of changing exhausting to the invalid, no clothes worn during the day should be retained about the person at night; nor should clothing worn during the night be allowed to remain on during the day, but a change of linen should be kept ready, properly aired by the time it is wanted.

When the patient is too weak to allow of daily changes of linen, then, instead, an entire change, in favour of clean linen, must be made as often as possible.

Personal cleanliness is also essential, and with due care there need be no fear of the patient taking cold. The face, neck, arms, and sometimes also the feet, should be washed with warm soap-and-water, once or twice a-day, and afterwards carefully dried. The sense of comfort which this produces in the patient's feelings is an evidence of its beneficial effects.

All the articles and utensils in a sick room should be kept constantly clean, such as the spoons and glasses required for the administration of the medicines, which can be easily rinsed out, and dried immediately after they have been used; the medicine bottle is to be well corked, and this is especially important when any of the contents of the phial are of a volatile nature, such as ammonia or ether.

Perhaps there are none of the requisites for the sick room which it is more necessary to keep clean than sponges, and yet, obvious as this may seem, it is often overlooked. What has been stated respecting their use in hospitals by Professor Miller ("Principles of Surgery") applies also in a degree in private practice. He says, "A sponge is a thing of some value in the eyes of a patient or nurse; it becomes soaked with discharge of various kinds, it is hastily and imperfectly cleansed after each employment, and ere its daily course is run can hardly fail to have been the means of conveying noxious matter to previously healthy sores, inducing their degeneration, and perhaps exciting the serious complication of erysipelas." And when we take into consideration the fact that every sore is a powerfully absorbent surface, we shall understand more fully how important it is that nothing be applied to it capable of giving rise, by its irritating or vitiated properties, to such dangerous consequences.

SITTING UP.—When the patient sits up in bed, a flannel gown should be thrown around him, and as some invalids are compelled to adopt this position from inability to lie down, some method of support for the back must be adopted, and for this purpose bed-chairs are made; but where they are not to be had, a small footstool, put behind the pillows and the bolster doubled, makes a very good substitute. The bed-chair has this advantage,—it may be elevated to any required angle by means of a rack behind.

MOVING.—When a patient has to be moved from one bed to another, there is great inconvenience from attempting to lift him from the first bed to the second with his head in the same direction after his removal as before. The persons moving him, being placed between the patient and the second bed, are in their own way. The best way of obviating this is to place the head of the second bed opposite the foot of the first, with an interval of three or four feet between; then the body is to be lifted from one bed to the other, by two or three persons, who will wheel round so as to place the head of the patient towards the head of the second bed, and opposite the foot of the first.

If this removal is impracticable, as is often the case, it is easy to change even the under sheet, without much disturbance, by rolling it

up from the sides towards the middle, and putting the clean one on in its place, with one half rolled up likewise; then getting the patient over the two rolls, on the clean half, and adjusting the side which he has left.

I need scarcely repeat, that all the attentions required by the sick should be given with the least possible noise, that it should be the study of those about the invalid to avoid the opening and slamming to of doors, frequent passing from one side of the room to the other; but this requires forethought and care, and is one of the characteristics of a well qualified nurse, of which I have next to speak.

THE NURSE should not much exceed 55 years of age, nor be younger than 25; for if beyond the former period she is scarcely likely to possess the requisite strength for her duties, and if younger than the latter period she cannot be expected to manifest that prudence and forethought, and that steadiness of deportment, which are so necessary in the sick room. Her health should be good, or she will be quite unfit for the duties of a nurse; she should have no tendency to spasmodic affections, vertigo, palpitation, gout, ulcers of the legs, paralysis, dropsy, or pulmonary affections; nor should her hearing or sight be defective. I have known great inconvenience result from a nurse being deaf; the consequent danger of misapprehending what is said to her, and the obvious detriment to a patient who has not strength to speak in a loud tone, scarcely need be further alluded to.

It is also requisite that she should be intelligent; able to read and write, so that all danger of mistakes on her part in giving medicines may be avoided. She should possess a cheerful disposition, and sufficient self-control and patience to bear with the irritability so often attendant on disease. Nothing can be more detrimental or inappropriate than contention and strife in the sick room. The nurse should understand that fretfulness and discontent frequently accompany bodily disease, and that it is her business to soothe and not to retaliate.

She should be willing and able to sustain fatigue and watching; not self-indulgent, but disposed to make sacrifices of personal convenience for the welfare of her charge. General cheerfulness should be expressed in her countenance, which should neither be unpleasing nor repulsive; she must be conciliatory, but not deficient in firmness where that is necessary, as in the administration of medicines, and possess a "voice ever gentle and low," an excellent thing in woman, and especially so in an attendant upon the sick.

Her attire, although simple and unpretending, should not be dark and sombre, but light coloured, and scrupulously clean; for if defective in

this last particular, she is unlikely to have much regard to it in those who are under her charge.

But if there is one point more than another on which I am disposed to lay stress, it is that the nurse be willing to follow implicitly the directions of the medical man; inability to conform in this respect manifests her total unfitness for the office she has undertaken. Indeed, of all the defects that are occasionally met with in the sick room, there is none more serious, none offering a greater impediment to the progress of cure, than the presence of an "enemy in the camp" in the shape of a self-opiniated, captious, contradictory nurse. Such a one is apt to think that, because the treatment may be different from what she has seen adopted, in what *she supposes* a similar case, that therefore it must be erroneous; ignorant or forgetful that it is altogether out of her province to decide what constitutes sufficient resemblance in cases of disease to necessitate identical curative measures, and also that even similar diseases may both admit and require various modes of treatment. She who is chiefly anxious to establish her own influence, and parade her own skill and experience, will not be very scrupulous in adhering to the directions of the medical attendant.

But this presumption will not characterize a nurse who aims at excellence in her own sphere; she will conscientiously obey the orders of the medical attendant, and be truthful in the reports she makes to him. Understanding her true relation to the invalid and to his physician, she will form no low estimate of the importance of her functions, and strive satisfactorily to perform them.

Administration of Medicine.—No bottle of medicine should be allowed to remain on the table, except when in actual use; the medicines employed for external application should be readily distinguishable from others, and be kept in a place apart from the rest. Some druggists use coloured bottles for the purpose. Bottles containing laudanum, or any medicine which may act as a poison, should be kept in a cupboard not accessible without some little trouble.

It is to be remembered that some medicines require to be largely diluted, acting more powerfully in that condition. This is especially true of aperients. Saline solutions, intended to act on the kidneys, should also be administered in a dilute form.

To promote the action of diaphoretics,—that is, of medicines which induce perspiration,—it is necessary to remain in bed, and be covered with blankets. Hot diluents taken without food contribute to the same effect. Sleep appears to assist perspiration.

The action of emetics is favoured by draughts of warm water.

One teaspoonful to a tablespoonful of flour of mustard in half a pint of warm water, or three tablespoonsful of common salt dissolved in water, makes a good domestic emetic. When a medicine has been given to subdue inflammation, and the first dose produces sickness, it should not be discontinued if ordered to be repeated. On the contrary, if purgative medicines continue to produce watery evacuations after having fully acted, their use should be suspended until fresh directions are obtained from the medical man. The taste of medicines may sometimes be disguised or rendered less nauseous by the vehicle in which they are taken, or by combination. Thus the taste of powdered bark and of rhubarb is best concealed by milk; infusion of senna by tea; castor oil is best taken in cold or hot milk; decoction of aloes has its bitterness lessened by extract of liquorice; cod liver oil may be taken in milk or orange juice, although some take it best in water.

When mercurial ointment is directed to be rubbed in, the hand of the attendant should be enveloped in a soft oiled bladder, and the friction should be conducted near a fire. In applying irritating liniments, as those containing croton oil, the hand should be defended by a glove; for otherwise, if the eye be inadvertently touched, inflammation is apt to ensue.

Fumigations.—Pastiles, camphor, and the like, are worse than useless for this purpose. The vapour of vinegar diffused through the room is refreshing, but of very little efficacy. The most effectual modes of fumigating are, by the vapour of nitric acid, and, still better, by the evolution of chlorine. The former is readily procured by pouring one part of oil of vitriol over two parts of nitre. Chlorine may be evolved in the following manner:—one part of chloride of lime may be mixed with forty parts of water, and placed in saucers about the room; the addition of a little sulphuric acid aids the extrication of the chlorine. The most economical proportions for fumigation are those employed at the Milbank Penitentiary:—

Common salt	10 ounces.
Black oxide of manganese . .	2 „
Strong sulphuric acid . .	6 „
Water	4 „

This is to be placed in a shallow earthen pan, and be allowed to remain for some days. Of course this proportion is only applicable to destroying putrid effluvia in a large room, or for the purpose of disinfection when it has recently been occupied by patients affected

with contagious diseases. Whether it be true, as some believe, that these agents have the power of destroying contagious matter or not, there can be no doubt of their utility in removing offensive effluvia, and at the same time lessening the impurity of the air.

MEANS OF AVOIDING CONTAGION.—It is important for persons in attendance on those affected with contagious diseases, to avoid all unnecessary exposure by a very near approach to the sick, especially when the bed-clothes are raised, and the effluvia are emanating from the body of the patient in a state of concentration. Then the person approaching the sick may hold the breath for a short time, and stand in such a direction that any current of air may not carry the effluvia of the patient *towards* but rather *away* from him. It must be remembered also that infectious matter does not usually act beyond a few feet from the sick, and commonly it does not affect the healthy unless there is some predisposition. This would be caused by fasting, overfatigue, watching, and mental depression; these, therefore, must be avoided. The diet of the attendants should be rather generous; and after exposure, active exercise in the open air will probably be advantageous.

DIETETIC MANAGEMENT.—Even did my limits allow of it, I need not here enter fully into this subject, which forms part of the treatment of disease. One point I cannot pass without naming,—it is, that the directions laid down by the medical man should be rigidly adhered to. How often is it found that disease is renewed again and again by some error in diet, against which the patient has been warned; how frequently do we find the mind especially weak in this particular, and the sick alleging, as an excuse, that they took "such a very little bit" that it could not possibly have done them harm. This shows a state of mind that requires mingled firmness and kindness on the part of the attendant and friends of the patient, as well as from the medical man; for however small that may be which is unfit for the patient, it is often quite sufficient to derange his digestion and protract his recovery. In many cases this adherence to rule in diet is the one thing essential to recovery; and this "little bit" is the more objectionable from its very littleness; for it is a great temptation and a monstrous excuse.

WATCHFULNESS.—In fever it is important that the patient should be closely watched by the attendant, who should note how much sleep the patient gets, whether it is disturbed, or if there is confusion of mind on waking. The character and number of the stools must be noted. When the patient requires support, which in this and many exhausting

diseases is the case when the disease abates, especially during the night, food must be given frequently and in small quantities. The danger of the patient sinking from mere exhaustion after severe disease must never be forgotten. Wine when ordered must be given regularly, and if it flushes the face and excites headache, it is not agreeing with the system, and its use must be suspended.

General Management.—In threatened consumption the vigour of the constitution should be kept up by the use of the tepid or cold bath, frictions to the surface, exercise in the open air—on horseback, if possible. To the use of exercise, cold weather should not be any obstacle. Even those who are much debilitated find their health increased by it. Flannel also should be worn next the skin, the patient at no period, especially during the night, allowing himself to feel the sensation of cold. When a change of residence is necessary in winter, Undercliff, Hastings, and Torquay are the best situations in this country. The diet should be farinaceous; milk and the lighter meats should enter largely into it. When there is fever, hæmorrhage, or inflammation, of course animal food would be improper. In discharges of blood, attended with feverishness, the patient should be kept quiet, and confined to vegetable food and milk. When exercise is allowable, it should be passive rather than active. When there is a tendency to Hydrocephalus, the wet-nurse, if the child be not weaned, should be quite healthy and free from any scrofulous taint, and from every habit likely to be injurious to her health. The child, after weaning, should be fed on a sufficient but unstimulating diet, including a moderate quantity of meat. It should be warmly clad, allowed plenty of exercise in the open air, and not confined in close rooms.

When there is a tendency to apoplexy, or the patient has been suffering from a fit, he must avoid all stimulation and excitement, especially from alcoholic drinks. He must sleep on a mattress, and with the head elevated. Exercise should be rather passive than active, and never prolonged to the extent of fatigue; he should never run fast, strain, or make any great muscular exertion. Both the warm and cold baths must be used with the greatest caution, and not without the advice of a medical man. Every engagement of the mind, as well as every exercise of the body, must be characterized by moderation. In diseases of the heart, the same carefully regulated diet, the same moderation in the use of exercise, and endeavours to maintain tranquillity of mind, are necessary. As regards

Moral and Mental Management.—It is most important at all

times to promote the hopefulness of the patient, even when the result is doubtful. It is the very nature of most diseases to depress the spirits and to lead to gloomy apprehensions, and it should always be the object of the medical man, and of those around the sick, to dispel this gloom, by maintaining, as much as possible, a cheerful view of the case. Indeed this more cheerful view is often the more correct one, and the very predictions of recovery tend to fulfil themselves. When we observe the influence of travelling on the invalid, and still more of cheerful society in recruiting energies apparently wasted and gone, we may form some idea, though probably even then an imperfect one, of the powerful influence which mental tranquillity and cheerfulness exercise upon the organic functions. When the patient is suffering from serious disease, happily there is usually one at hand who can give that assistance and support which can never be looked for from the best trained nurse. What an antidote to suffering is the eye of affection! What so cheering as its smile? What so supporting as its sympathy? And where the malady does not admit of cure, much of the distress of the sufferer may thus be alleviated. It is rarely necessary to shock the patient with the statement that his disease is incurable, although his friends should be informed of it.

The patient, too, by gentle management may be led to speak on subjects bearing relation to the future, which will relieve his mind from much anxiety, and strengthen his "joy and peace" in looking forward perhaps to a happier state, at a time when all here is evidently passing away. It requires judgment and care to allude to such topics: the peculiarities of the patient's mind, as well as the period and probable result of the disease, must be taken into consideration; for by an untimely and ill-judged statement, in which the justice rather than the forbearance and mercy of God is set forth, very injurious and even fatal consequences may result. I have always thought it better not to defer to the last allusions to such subjects in serious illness, but to mention them early; not because there is an absence of all hope of recovery, but because life is ever uncertain, and either event should be provided for.

> "And why not think on Death? Is Life the theme
> Of every thought, and wish of every hour,
> And song of every joy?"

Thus the truths of Religion might be among the consolations of the sick chamber, resignation smooth the pillow of the dying, or gratitude fill the mouth of the restored with a song of praise to Him "who healeth all diseases."

CHAPTER XXXII.

THE DIET OF INVALIDS.

Above two thousand years ago it was laid down by Hippocrates as an axiom in medicine, that abstinence is of excellent effect in acute diseases, but dangerous in chronic ones; and in modern times there is no doubt that the danger to which Hippocrates alluded is often incurred. The cases in which this danger threatens are not so commonly those of defined chronic diseases, as those which consist in what is ordinarily called chronic ill health. It is not easy exactly to determine how far the actual cure of disease depends upon the direct influence of remedies, and how far upon the effect of the sanative powers of the constitution; but it is certain that remedies, when they aid in curing, operate only in restoring to these sanative powers the natural energy of which, by adverse circumstances, they had been deprived. Acute diseases run a course during which, as it would seem, by the excited activity of certain functions, the morbific influence, with or without the assistance of remedies, is overcome; and if there be enough of vigour left in the system, recovery straightway commences. In the meantime the system requires but little food, and that of the simplest kind; and when the morbid action runs its course within a few days, total abstinence is perhaps the safest rule. But chronic diseases last so long, that if a like abstinence be practised, the patient must necessarily die of starvation, even though the disease may not be otherwise of a fatal character. And since what is called chronic ill health may continue for years, it is plain that unless pains be taken to nourish the patient, the risk is not small that his death may be as much the result of deficient sustenance as of disordered health. The cases in which there is danger of an aggravation of the invalid state, or even of a fatal event solely from insufficient nourishment, are those in which the appetite is fastidious and digestion painful. It is to the management of the diet and regimen, in such cases, that my present observations are directed; since a more special management of each particular constitution is requisite, whenever in invalids the appetite and digestion are good, and the opposite evil of over-nutrition arises.

In general the stomach readily habituates itself to most kinds of food which in civilized life are currently said to be of easy digestion. When any article of this kind disagrees with an invalid, he will

often be able to bring the stomach to bear it by commencing with a very small quantity, which is gradually to be increased. This will be found to be a most important rule, it being certain that by the cultivation of an excessive fastidiousness the health of the whole system is too often sacrificed to keeping the stomach exempt from occasional uneasiness. The diet generally most conducive to health is a due mixture of animal and vegetable substances; for it is seldom that the living system thrives under the mere use of animal food and bread. Fresh vegetables are generally requisite; and if the stomach at first rejects these, pains should be taken to habituate it to their presence. In many states of ill health a purely vegetable diet is more soothing to the bodily frame, but owing to the great quantity required, during full health and under bodily exertion, it is hardly conceivable that ill health could be wholly removed by a merely vegetable diet.

It is now proved, however, that vegetable articles of food contain all the essential chemical principles requisite for the repair of the fluids and solids of living bodies. In short, the great proximate elements or principles of the animal body, fibrine, albumen, caseine, and the like, do not appear to be formed in the animal body, but to be produced chiefly from water, carbonic acid, and ammonia, in the process of vegetation, and to be merely extracted from vegetable aliments in the process of digestion. Vegetable food, then, provided it is in adequate variety, is all-sufficient for the nutrition of the animal frame; and it is moreover preferable to animal food, as being less stimulating. But an objection lies to it, for the use of invalids, which is too often insurmountable—namely, the inconvenience of its great bulk giving rise to unbearable distention and uneasiness. In some kinds of ill health, it is advisable to employ vegetable food exclusively at first; and then, when some degree of improvement has arisen, to add the lighter kinds of animal food. It will also be found, that a plan the opposite of this will sometimes be successful:—namely, to begin with such kinds of animal food in small quantities as the stomach will bear, and then to add vegetable articles of diet. If a patient labouring under chronic ill health really desires to recover, occasional trials of new kinds of food must not be rejected merely from fear of exciting some slight disturbances of the stomach, which will often be calmed by calcined magnesia or bicarbonate of soda, combined with some aromatic water.

The distinction drawn of late years between those chemical principles of food which repair the blood and the solids, and those which

merely maintain animal temperature, is of the highest importance. The maintenance of animal temperature, that is, the maintenance of the heat of the body at nearly 100° of Fahrenheit's thermometer, notwithstanding the more or less rapid abstraction of heat by the surrounding air, is a function, the continued exercise of which is imperatively necessary to the support of life. In short, the maintenance of heat in the body is as essential as the perpetual renewal of the blood and the solids by direct nutrition. This maintenance of heat is accomplished by the slow combustion of carbon,—an invariable constituent of the animal solids, as well as of the common articles of diet. And this slow combustion is kept up by the oxygen of the atmospheric air unceasingly supplied in the act of respiration. Those kinds of food which are sufficient for the repair of the blood and of the solids are also capable of maintaining the slow combustion, in the act of respiration necessary for upholding the animal temperature; but those kinds of food, which are in a strict sense termed respiratory or heat-evolving foods, are not adequate to the repair of the blood and the solids. The articles of food fit to repair the blood and the solids are those which, whether of animal or vegetable origin, contain fibrine, albumen, or caseine; the articles of food strictly named respiratory are those which, without containing the three principles just mentioned, consist of oily or fatty matter, sugar, starch, gum, or other non-nitrogenous principles.

Mammals.—What is commonly called meat or flesh in our markets is the muscular substance of mammals—as the ox, the sheep, the pig, and their young; the deer, the rabbit, and the hare. It consists chiefly of fibrine, which is one of the chemical principles capable of repairing the blood and the solids. Besides fibrine, flesh contains a small proportion of albumen, some extractive matter, and two recently discovered substances, namely, kreatine and kreatinine, with certain saline matters. Although flesh consists of a large proportion of fibrine, and a very small proportion of albumen, while blood contains a large proportion of albumen and a small proportion of fibrine, yet flesh approaches nearer in reality to the composition of blood than is at first sight apparent. On this subject Liebig says, "The commonest observations teach us, that flesh possesses a greater nutritive power than all other kinds of food. The chief constituent of flesh is muscular fibre, or the fibrine of muscle, which constitutes nearly 70 per cent. of the dried flesh purified from fat. In the flesh this muscular substance is interwoven with fine membranes; and a multitude of nerves are ramified through

it, as well as innumerable minute vessels, filled with coloured or colourless fluids. Chemical analysis has detected the cause of the nutritive property of flesh, in a manner free from doubt, by showing that the fibrine of muscle and the albumen of blood contain the same elements in the same proportion; and that these two bodies stand to each other in the same relation as fresh albumen and coagulated albumen. In composition, fibrine is nothing more than albumen of blood solidified and in an organised form. The difference, if any, is so minute, that an analysis of the muscular fibre does not differ more from one of albumen of blood than two analyses of the latter body do from each other. The blood, considered as a whole, has the same composition as flesh." (*Liebig*, "Familiar Letters on Chemistry," 1851, pp. 346-7.)

The cellular tissue of muscle passes, by boiling, into gelatine; and young meats, it is well known, afford a greater quantity of gelatine than old. It is a fact familiar to every one, that the gravy of veal and of lamb gelatinizes more readily when cold than that of beef or mutton. Notwithstanding the difference in taste between the flesh of the several mammals employed for food, there is hardly any marked difference in their chemical composition.

In a dietetic point of view the juice of flesh deserves particular attention. When finely-chopped muscular flesh is exposed to the action of cold water, assisted by pressure, there is left a white fibrous residue, composed of the muscular fibres, the cellular tissue, the vessels, and the nerves. When everything which can be removed has come away, the water is found to have dissolved from 16 to 24 per cent. of the entire weight of the dry flesh. Of the residue, the fibrine makes up about three-fourths. When this residue is heated to between 158° and 177° Fahr., that is, to a temperature considerably less than that of boiling water, the fibres shrink and become horny; the mass no longer takes up water; and when boiled it hardly imparts any taste to the water, and is itself quite insipid; it cannot be masticated, and even dogs reject it.

In the juice, on the contrary, all the savoury constituents are found. This juice of flesh is commonly tinged red by some portion of the colouring matter of the blood. If this juice be gradually heated to boiling, the albumen of flesh separates at about 133° Fahr., in almost colourless cheesy floccules, while the colouring matter does not coagulate below 158° Fahr. The liquid is now of a pale yellow; and shows the presence of a free acid by reddening litmus paper. The proportion of albumen which separates in this process is much

greater with the flesh of young than of old animals. This liquid, after the separation of the albumen and colouring matter of the blood, has the aromatic taste and all the qualities of soup made from flesh. By evaporation under a gentle heat it passes finally to a brown colour, acquiring the flavour of roast meat. The brown soft mass, which remains after complete evaporation, is readily soluble in cold water. If one part be dissolved in thirty-two parts of hot water, an excellent soup is obtained. Thus, as Liebig remarks, "The fibre of of meat, in its natural state, is steeped in and surrounded by a liquid containing albumen; and the tender quality of boiled or roasted meat depends on the amount of the albumen deposited in its substance, and there coagulating, whereby the contraction, toughening, and hardening of the fibres is prevented. Meat is underdone or bloody," he continues, "when it has been heated throughout only to the temperature of coagulating albumen, or 133° Fahr.; it is quite done or cooked, when it has been heated through its whole mass to between 158° and 165° of Fahr., at which temperature the colouring matter of the blood coagulates." (*Liebig*, ib., p. 417.) In accordance with these facts it is found that in the boiling of meat with water a difference of effect is produced when the boiling is differently conducted. Meat may be so boiled as to retain within itself its most valuable constituents—or in such a manner as to afford a good soup at the expense of the best qualities of the meat.

If the meat is introduced into the pot when the water is boiling briskly, and this brisk boiling be kept up for a few minutes, after which the pot is removed to a warm place, so that the temperature may be no more than between 158° and 165°, the meat will retain all its most essential qualities. In this case, by the sudden application of a considerable heat, a coagulation of the albumen on every side to a certain depth from the surface is effected, so that through the envelope so formed, neither can the water penetrate inwards, nor can the juices escape outwards from the substance of the meat. The flesh comes forth, when cooked, juicy and well flavoured. If, on the other hand, the meat be put into cold water and set on the fire, so as to be brought slowly to boiling, the soluble savoury matters of the flesh pass into the water, and a rich soup is afforded at the expense of the meat. In this case, the albumen is gradually dissolved out from the surface to the centre, while the fibre, losing in a greater or less degree its quality of shortness or tenderness, becomes hard and tough. The thinner the piece of flesh is, the greater is its deterioration in this respect. If care be taken to avoid either extreme, a

moderately good soup, like Scotch broth, may be obtained, without materially injuring the qualities of the meat. The soup recommended by Liebig, and now currently known by his name, is found of the greatest possible service in cases of debility. I quote his own words. "If finely chopped flesh be slowly heated with an equal weight of water, kept boiling for a few minutes, and then strained and pressed, we obtain the very strongest and best-flavoured soup which can be made from flesh." (*Liebig*, ib., p. 410.)

Even in roasting meat it is, upon the principle above referred to, advantageous to make the heat strongest at first, and after a while to reduce it. In roasting, the juice which first flows out being evaporated upon the surface of the meat, imparts the dark brown colour, and affords the lustre and the strong aromatic flavour of roasted meat.

The free acid of the juice of flesh is not constant. It appears to be generated in consequence of changes which commence very soon after death. The muscles of animals just killed—that is, before the stiffness which follows death has taken place—do not redden litmus paper. Boiling, however, developes this acid quality. It has long been known that the flesh of animals newly killed, if cooked before the stiffening has commenced, eats tender enough. Few observations, however, exist as to the difference of effect on health, if there be any, of this mode of eating as compared with the more ordinary practice. There is, however, a small knot of persons in France, who have persuaded themselves that the use of the flesh of newly killed animals, of newly gathered vegetables, and of water fresh from the spring, is materially conducive to health and long life. The patriarch of this little sect is above ninety years of age. The animals employed by those who have adopted these views are, of course, chiefly poultry.

In selecting the proper kind of food for invalids, the quality of digestibility deserves peculiar attention. On this point the tables of Dr. Beaumont, founded upon observations made upon the Canadian, St. Martin, are of considerable service. St. Martin, however, although suffering from a fistulous aperture, by which the stomach could be looked into, was, nevertheless, for many years, in other respects, in robust health; and hence the results drawn from this source, as to the digestibility of different kinds of food, are not to be taken as an absolute rule in regulating the diet of invalids, but only as affording some guidance in our efforts to discover the management requisite for each individual case. According to Beaumont, the several kinds of meat stand in the following order of digestibility. To render the

comparison more obvious, the time required to complete the process is expressed in minutes.

Broiled venison steak	95	minutes.
Broiled sucking pig	150	„
Broiled fresh lamb	150	„
Boiled beef with salt only	165	„
Roast beef underdone	180	„
Beef steak	180	„
New pork, recently salted	180	„
Stewed pork, recently salted	180	„
Broiled fresh mutton	180	„
Boiled fresh mutton	180	„
Broiled pork, recently salted	195	„
Pork steaks	195	„
Fresh roast mutton	195	„
Fresh lean beef, roasted dry	210	„
Fresh lean beef with mustard	210	„
Fresh lean beef, fried	240	„
Broiled fresh veal	240	„
Old hard salted beef, boiled	255	„
Recently salted pork, fried	255	„
Fresh veal, fried	270	„
Pork roasted, fat and lean	315	„

Dr. Beaumont's tables afford no indication of the comparative digestibility of hare or rabbit, neither of which, it is understood, is so digestible as beef or mutton; but of that of the visceral parts of mammals the following evidence is given:—

Tripe, soused	60	minutes.
Brains of ox, boiled	95	„
Fresh liver of ox, broiled	120	„
Spinal marrow of ox, boiled	160	„
Heart, fried	240	„

The calf's sweetbread is very digestible, and well suited to invalids, probably promoting the digestion of other substances. Kidney is palatable, but less digestible than sweetbread.

Birds.—Chicken is more tender and less stimulant than most meats; yet it is not under all circumstances more easy of digestion. It is not the best kind of food for persons whose digestive powers are

weakened or deranged; but for the convalescent from acute diseases it is commonly preferred, as tending less to excite febrile action. The comparative digestibility of the several kinds of birds will appear from the following extract from Beaumont's table :—

Wild turkey, roasted	138	minutes.
Domestic turkey, boiled	145	„
Domestic turkey, roasted	150	„
Wild goose, roasted	150	„
Full-grown chicken, fricasseed	165	„
Chicken soup	180	„
Domestic fowl, boiled	240	„
Domestic fowl, roasted	240	„
Domestic ducks, roasted	240	„
Wild ducks, roasted	270	„

Besides the birds here referred to, the pheasant, the partridge, and the pigeon, are in common use; and when simply cooked and eaten in moderate quantity, they are well adapted to form part of the diet of the invalid.

Fowls, as articles of food, are sometimes divided into the white-fleshed and the dark-fleshed. The former, as the chicken, the turkey, and the pheasant, are not very difficult of digestion, but are chiefly prized as being little stimulating. Thus broiled chicken will sometimes remain on the stomach, when almost every other kind of food would be rejected; and chicken broth is an excellent kind of food when the stomach is irritable. The grouse and black cock belong to the dark-fleshed fowls. These and the birds resembling them are rather stimulating, and hardly so easy of digestion as chicken. For invalids they should not be kept too long, and therefore young birds should be preferred.

Aquatic birds—namely, waders and swimmers—have the flesh for the most part penetrated with fat; so that they are a less appropriate diet for invalids. To the waders the snipe and woodcock belong, and these are less objectionable. The brains, the gizzard, the intestines termed the trail, and the liver, particularly the fat liver of the goose, belong rather to the table of the epicure than to that of the invalid.

Eggs constitute an important part of the food of persons whose health is delicate. When newly laid and lightly cooked, as slightly boiled or poached, they are with most persons sufficiently easy of digestion. They should be boiled so that the white may be moderately

coagulated, while the yelk remains fluid. Hard eggs are reckoned difficult of digestion, and, although the rule is very exceptionable, invalids should not venture upon them. Custards, custard pudding, and light puddings made with eggs, are often serviceable, particularly when butcher's meat is forbidden; but omelettes, pancakes, fritters, and other dishes made with eggs, and cooked by frying, must be sparingly used.

Dr. Beaumont's experiments with eggs yield the following results:—

Eggs, whipped raw	90	minutes.
Raw fresh eggs	120	,,
Roasted eggs	135	,,
Soft boiled eggs	180	,,
Hard boiled eggs	210	,,
Fried eggs	210	,,

Milk, as a kind of food, ranks near to eggs, and is more properly placed under the head of food than of drinks. It is in reality the type of food, being the sole nutriment of the young animal for so long a period.

Milk is a very useful and valuable article of diet for invalids and convalescents; although in many cases it is inadmissible, from the difficulty of digesting the fatty matter, or butter, which is one of its constituents. "Milk diet is ordered when we are desirous of affording support to the system with the least possible stimulus or excitement. It is well adapted for inflammatory diseases of the chest, of the alimentary canal, and of the bladder, when it is considered expedient to employ a nutritious but not stimulating diet. After hæmorrhages, when the powers of the system have been greatly exhausted, a milk diet is frequently beneficial. It has also been considered one of the best means of preventing and curing gout. It is a good diet also for many of the diseases of children, especially those of a strumous or scrofulous nature. In some of the above-mentioned maladies, when the stomach is weak and irritable, cow's milk is apt to occasion vomiting and other unpleasant effects, in consequence of the butter which it contains."—(*Pereira*, p. 505).

Cow's milk consists of:—

Caseine, about	4½	per cent.
Butter, about	3½	
Sugar of milk, nearly	5	,,
Various salts, more than	½	,,
Water, nearly	87	,,

Woman's milk differs from cow's milk chiefly in containing much less caseine and considerably more sugar. Ass's milk agrees more nearly with woman's milk than with cow's milk, since it contains a small proportion of caseine and a large proportion of sugar. Goat's milk contains a little less caseine and a good deal more sugar than cow's milk.

Milk agrees well with children; but when cow's milk is found to create disorder in young people, ass's milk should be substituted. The addition of lime-water often renders milk more light on the stomach. According to Beaumont's table, the digestibility of milk, butter, and cream, stands as follows:—

Boiled milk	120	minutes.
Raw milk	135	,,
Melted butter	210	,,
Cream subjected out of the stomach to the action of gastric juice	1530	,,

Whey is an excellent diluent drink, as well as an article of nutrition. It is not improper in febrile and inflammatory complaints.

Buttermilk is an agreeable cooling drink in febrile states.

Cheese can hardly ever be suited to the invalid stomach.

Reptiles.—Of the reptilia there is none employed in this country for food except the turtle, which is a tender, delicate diet, while young; but when old the animal becomes tough and less agreeable to the stomach. Turtle soup is reckoned highly restorative.

Fish.—The flesh of fish contains nearly the same proximate elements as the flesh of mammals and birds, but with a decidedly larger proportion of water. Thus the flesh of the cod contains nearly 80 per cent. of water along with 20 per cent. of nutritive substance, namely, 14 of albumen and fibrine, and 6 of gelatine. White fish is free from oil. Of this description are the whiting, the cod, the haddock, the sole, the plaice, the flounder, and the turbot; on the other hand, fishes which have their flesh coloured, abound in oil, and are in consequence less easy of digestion. To this kind belong salmon, eels, herrings, pilchards, and sprats. Fish is plainly less nutritive than butcher's meat; but when used in moderate quantity is less stimulating. Fresh water fish are in general less adapted for invalids than salt water fish, which are at once more palatable and more digestible. The roe and sounds of fishes are unsuitable for invalids.

Shell Fish.—Among molluscous animals, namely, mussels, cockles, scallops, periwinkles, whelks, limpets, and oysters, the latter is the only one well adapted for the food of the invalid.

Dr Beaumont's table exhibits the following evidence as to the digestibility of oysters —

Fresh raw oysters	175 minutes.
Fresh roasted oysters	195 ,,
Fresh stewed oysters	210 ,,

Many crustaceans, as well as the molluscs just referred to, come under the head of shell fish, and are in high esteem; namely, the common lobster, the thorny lobster or common crawfish, the river crawfish, the black clawed crab, the prawn, and the shrimp; all these are regarded as delicate or dainty, and should be avoided by invalids.

[illegible] The varieties of vegetable food may be [illegible] according as they are derived from particular natural families. [illegible] would advise botanical order, as such an arrangement [illegible] vegetable food most closely [illegible]

[illegible] this family its most important articles of vegetable [illegible] as chestnuts, as also its rice, wheat, oats, barley, [illegible] and [illegible]

Flour	392 lbs.
Biscuit, or fine middlings . . .	10 „
Toppings, or specks	8 „
Best pollard, Turkey pollard or twenty-penny	15 „
Fine pollard	18 „
Bran and coarse pollard . . .	50 „
Loss sustained by evaporation, and waste in grinding, dressing, &c. . .	11 „
Total . . .	504 lbs.

Wheat contains a larger proportion of gluten than the other cereal grains—that is, than the other grains furnished by grasses. Semolina, soujee, and mannacroup, are granular preparations of wheat deprived of bran. According to Dr. Pereira, these substances are prepared from the best Kentish wheat. "They possess," he says, "all the nutritive qualities of wheat, and are very agreeable, light, nutritive articles of food, well fitted for invalids and children." Macaroni, vermicelli, and Cagliari paste, are obtained also from wheat. They are imported from Genoa and Naples; but are also made in this country from semolina. Various preparations are sold more or less approaching to these. Hard's farinaceous food, according to Dr. Pereira, is prepared from the finest wheat alone. Densham's farinaceous food is a mixture of three parts wheat flour and one part of barley meal; on the contrary, according to the same authority, Bright's nutritious farina is potato-starch, and therefore very inferior in its nutritive qualities. Dr. Pereira's "Treatise on Food and Diet" may be consulted advantageously on the several forms of wheaten bread.

Oats.—The common oat used in this country is the Avena sativa. When the grains are denuded of their coverings, they are called groats or grits; and these when crushed are termed Embden groats; and when ground into flour, prepared groats. Oatmeal is made by grinding the kiln-dried grains, stripped of their husk and outer skin. Oats are nutritive; but are apt to disagree with the delicate. They form an excellent food for robust people accustomed to much out-of-door exercise. Oatcake—that is, unfermented bread made of oatmeal—is very apt to cause heartburn in those unaccustomed to such food.

Barley, obtained from several species of Hordeum, is highly nutritious. In Scotch broth, decorticated barley (sold as pot barley)

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Vegetables and Fruit.—The varieties of vegetable food may be treated according as they are derived from particular natural families, without following so much a strict botanical order, as such an arrangement brings together those kinds of vegetable food most closely allied to each other.

Grasses.—From this family the most important articles of vegetable food are obtained; of these the chief are wheat, oats, barley, rye, rice, maize or Indian corn, millet, and sorghum, durra or Guinea corn. The proximate principles contained in food of this description are the following:—starch, vegetable albumen, ordinary gluten (including glutine proper, mucine, oily matter), sugar, gum, earthy phosphates, ligneous matter (bran, husk, &c.), and water. Thus foods of this kind contain both nitrogenized or plastic elements of nutrition, and non-nitrogenized or respiratory elements; the former being vegetable albumen, vegetable fibrine, gluten, and mucine; the latter being starch, sugar, and gum. Dr. Beaumont's table affords the following evidence of the digestibility of several kinds of food derived from this source:—

Boiled rice	60 minutes.
Boiled barley soup	90 ,,
Boiled barley	120 ,,
Baked sponge cake	150 ,,
Baked custard	165 ,,
Boiled apple dumpling . . .	180 ,,
Baked Indian corn cake . . .	180 ,,
Indian corn bread	195 ,,
Fresh wheaten bread . . .	210 ,,

Dr. Pereira gives the following table, as showing the products obtained by grinding one quarter, or eight bushels of wheat:—

Flour	392 lbs.
Biscuit, or fine middlings . . .	10 „
Toppings, or specks	8 „
Best pollard, Turkey pollard or twenty-penny	16 „
Fine pollard	18 „
Bran and coarse pollard . . .	50 „
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diseases is the case when the disease abates, especially during the night, food must be given frequently and in small quantities. The danger of the patient sinking from mere exhaustion after severe disease must never be forgotten. Wine when ordered must be given regularly, and if it flushes the face and excites headache, it is not agreeing with the system, and its use must be suspended.

General Management.—In threatened consumption the vigour of the constitution should be kept up by the use of the tepid or cold bath, frictions to the surface, exercise in the open air—on horseback, if possible. To the use of exercise, cold weather should not be any obstacle. Even those who are much debilitated find their health increased by it. Flannel also should be worn next the skin, the patient at no period, especially during the night, allowing himself to feel the sensation of cold. When a change of residence is necessary in winter, Undercliff, Hastings, and Torquay are the best situations in this country. The diet should be farinaceous; milk and the lighter meats should enter largely into it. When there is fever, hæmorrhage, or inflammation, of course animal food would be improper. In discharges of blood, attended with feverishness, the patient should be kept quiet, and confined to vegetable food and milk. When exercise is allowable, it should be passive rather than active. When there is a tendency to Hydrocephalus, the wet-nurse, if the child be not weaned, should be quite healthy and free from any scrofulous taint, and from every habit likely to be injurious to her health. The child, after weaning, should be fed on a sufficient but unstimulating diet, including a moderate quantity of meat. It should be warmly clad, allowed plenty of exercise in the open air, and not confined in close rooms.

When there is a tendency to apoplexy, or the patient has been suffering from a fit, he must avoid all stimulation and excitement, especially from alcoholic drinks. He must sleep on a mattress, and with the head elevated. Exercise should be rather passive than active, and never prolonged to the extent of fatigue; he should never run fast, strain, or make any great muscular exertion. Both the warm and cold baths must be used with the greatest caution, and not without the advice of a medical man. Every engagement of the mind, as well as every exercise of the body, must be characterized by moderation. In diseases of the heart, the same carefully regulated diet, the same moderation in the use of exercise, and endeavours to maintain tranquillity of mind, are necessary. As regards

Moral and Mental Management.—It is most important at all

times to promote the hopefulness of the patient, even when the result is doubtful. It is the very nature of most diseases to depress the spirits and to lead to gloomy apprehensions, and it should always be the object of the medical man, and of those around the sick, to dispel this gloom, by maintaining, as much as possible, a cheerful view of the case. Indeed this more cheerful view is often the more correct one, and the very predictions of recovery tend to fulfil themselves. When we observe the influence of travelling on the invalid, and still more of cheerful society in recruiting energies apparently wasted and gone, we may form some idea, though probably even then an imperfect one, of the powerful influence which mental tranquillity and cheerfulness exercise upon the organic functions. When the patient is suffering from serious disease, happily there is usually one at hand who can give that assistance and support which can never be looked for from the best trained nurse. What an antidote to suffering is the eye of affection! What so cheering as its smile? What so supporting as its sympathy? And where the malady does not admit of cure, much of the distress of the sufferer may thus be alleviated. It is rarely necessary to shock the patient with the statement that his disease is incurable, although his friends should be informed of it.

The patient, too, by gentle management may be led to speak on subjects bearing relation to the future, which will relieve his mind from much anxiety, and strengthen his "joy and peace" in looking forward perhaps to a happier state, at a time when all here is evidently passing away. It requires judgment and care to allude to such topics: the peculiarities of the patient's mind, as well as the period and probable result of the disease, must be taken into consideration; for by an untimely and ill-judged statement, in which the justice rather than the forbearance and mercy of God is set forth, very injurious and even fatal consequences may result. I have always thought it better not to defer to the last allusions to such subjects in serious illness, but to mention them early; not because there is an absence of all hope of recovery, but because life is ever uncertain, and either event should be provided for.

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Claret includes the red wines of France, and especially those grown in the neighbourhood of Bourdeaux. They are light and wholesome wines, especially when imported pure and unadulterated with brandy for the English market. For daily use, clarets take precedence of all other wines; although by gouty, rheumatic, and dyspeptic persons they are generally to be avoided from their acidity. Even with claret it is not impossible seriously to injure the health, when too little regard is given to quantity.

Burgundy is more stimulating than claret, and therefore must be used in less quantity. When it does not cause headache or indigestion, a moderate allowance may be very beneficial.

Champagne is a wine in which the invalid must indulge with the greatest caution. It is very exhilarating; and when the spirits flag, a single glass may sometimes be found beneficial. But it is also very intoxicating; and although it acts as a diuretic, the headache which follows its abuse is severe and lengthened. Gouty persons must refrain from champagne.

German Wines are perhaps of all others to be preferred for invalids. Their acidity depends upon the presence of tartaric acid; and so far are they, when sound, from creating acidity of the stomach, that they are often the only wines which can be taken without giving rise to that very annoying affection. Liebig affirms that gout is unknown wherever the Rhine wines are habitually taken.

Beer is the fermented infusion of cereal grains, and is better adapted for those who live much in the open air, and take a great deal of exercise, than for the invalid. At the same time the bitter beers are mild and grateful tonics, and often very beneficial in some forms of indigestion, and in many states of constitutional debility. Excess in beer drinking—I have known a German student drink forty-eight "choppin" (about as many English pints) in the course of an evening—exerts a most pernicious effect on the constitution; and the recent introduction of the light pale ales of Burton has proved a great step in the advance of temperance.

RECAPITULATION.—I cannot better conclude this chapter, or indeed my volume, than by laying down certain general rules and maxims, the observance of which is calculated, both in the healthy and in the invalid, to render digestion more easy and perfect; and these I shall quote as follows, from a lecture lately delivered by Dr. George Budd, and reported in the *Medical Times and Gazette*, even although I may thus repeat the substance of much of which I have before spoken.

According to Sir Henry Holland, one of the best as well as latest writers on this subject, the most important of these maxims are the following:—

1. That the food should be well masticated.

2. That the stomach should never be filled to a sense of uneasy repletion.

3. That there should be no urgent exercise, either of body or mind, immediately after a full meal.

The importance of proper mastication has been long generally recognised, and might have been inferred from the existence of special organs for this purpose, in some form or other, in all animals that eat solid food.

By mastication the food is ground down, and intimately mixed with saliva. The trituration of the food allows the gastric juice to act speedily on every particle of it on all sides, and so hastens that solution of it in the stomach in which stomach-digestion essentially consists. The chemist imitates the process when he grinds down in his mortar any hard and sparingly-soluble substance which he wishes to dissolve. The bird that feeds on hard grains, by an instinct more unerring than man's reason, swallows pebbles to increase the grinding power of its crop.

If the food be tough, and so escape proper trituration, or if it be swallowed in large morsels, through which the gastric juice cannot readily filter, it is dissolved in the stomach much more slowly, and tends to cause uneasiness of the stomach, and all the other evils that result from slow and imperfect digestion.

There has been much difference of opinion respecting the uses of saliva. The first and most obvious use of it is, to lubricate the mass of food in the mouth, and so make it more easy to swallow. The quantity of saliva is in great measure determined by the need of it for this purpose. The more liquid the food, the less, *cæteris paribus*, is the secretion of saliva. The saliva must also serve to keep separate the particles of the triturated food, and thus expose them more fully to the action of the gastric juice.

Liebig, considering the great disposition which saliva has to froth, has rightly remarked, that it must convey into the stomach atmospheric air, and has suggested that a certain quantity of air, or rather of the oxygen it contains, may contribute to set in action or promote the digestive process.

Besides these mechanical uses, saliva has a chemical action on the starchy principles of the food. It has no solvent or digestive action

on albuminous substances, but, like the pancreatic juice, it promotes the transformation of starch into sugar,—the first step in the series of changes which starch can undergo in the animal body.

Seeing that proper mastication may contribute to digestion in various ways, it is obviously important, as regards digestion, that the organs of mastication be in a sound condition. If many of the teeth be wanting, the food may escape proper trituration. If the teeth be filthy, or be much decayed, the saliva, always prone to decomposition, very readily becomes fetid; and the food intimately mixed with this saliva, like food tainted in other ways, is apt, in persons of weak digestion, to offend the stomach, and to undergo in the stomach common putrefactive changes, thus causing all the discomfort that arises from surfeit.

The second maxim, "not to fill the stomach to a sense of uneasy repletion," is more important than the maxim we have just considered, and more frequently broken. In the middle and upper classes of society, indigestion is too often, as a humorous writer termed it, "the remorse of a guilty stomach." The appetite is indulged, and more is habitually eaten than is required to nourish the body, or than the stomach can long continue to digest. The consequence is, that the stomach suffers, and that superfluous matters, including the hurtful products of imperfect digestion, pass into the blood, disorder the processes of nutrition in various parts of the body, by polluting the nourishing stream, and often cause permanent change of structure in the arteries, and in the liver and the kidney, which serve to eliminate the superfluous matters from the system.

The sufferings of the stomach itself are but a small part of the ailments that habitual over-indulgence of the appetite brings on. Not unfrequently a vigorous stomach digests much superfluous food for a long time without pain or uneasiness, and the penalty of the indulgence is paid in occasional fits of the gout, or, more remotely still, in the various ailments that result from those permanent changes of structure that high living tends to bring on.

Experience has shown, that uneasy digestion more frequently results from excess in the quantity of food than from any fault in its quality,—a circumstance which our present knowledge of the process of digestion enables us fully to explain.

The gastric juice, out of the body, will dissolve the various kinds of food; but, as Spallanzani long ago showed, it will dissolve only a limited quantity of any kind. When this limit is attained, the solvent power is expended. The digestive power may be restored to a certain

extent by the addition of water or of free acid; but to dissolve much more of the food, there must be a fresh quantity of the juice.

The stomach at any time can only furnish a certain quantity of gastric juice. If more food be eaten than this can dissolve, part of the food is imperfectly digested, and causes uneasiness of the stomach; and often the undigested food, as Dr. Beaumont has shown, excites in the mucuous membrane an erythematous inflammation, which prevents the proper nutrition of the membrane, and the restoration of the expended power.

Eating too frequently is equivalent to eating too much. When the power of the stomach is expended, it is gradually restored, like the intellectual power of the mind or the mechanical power of the muscles, by the nutrition of the organ on which it depends. For this restoration of power, whatever be its kind, an interval of rest is necessary.

The absolute quantity of food required to nourish the body varies greatly in different persons,—partly from inherited peculiarity of constitution, partly from habits of life and other conditions. The supply must equal the demand, so that no positive rules as to quantity can be laid down. In some persons, without any peculiarity that constitutes actual disease, the waste of the body is much greater, and what is eaten is less perfectly assimilated, and more food is consequently required than in others. The rule, therefore, laid down by Dr. Holland, not to fill the stomach to a sense of uneasy repletion, is much better than any positive rules as to the quantity of food. The quantity of food should clearly never be greater than the stomach can easily digest.

The third maxim, "that there should be no urgent exercise, either of body or mind, immediately after a full meal," merely enjoins obedience to a natural tendency, which man has in common with other animals. All alike have a disposition to rest when the stomach is full. Digestion requires an additional flow of blood to the stomach and an expenditure of nervous power, and goes on more slowly when the means of its support—the nervous influence and the blood—are needed elsewhere. Men who earn their living by bodily labour, and have digestive power to spare, may often violate this rule with impunity; but studious men, and men of feeble digestion, can seldom do so without aggravating their ailments. The work of digestion is quite as much as the system can well do at a time.

It is also important to easy digestion that the meals should be taken at proper times. With regard to the absolute time of meals,

much depends on habit; and this again is often determined by the custom of society, or the needs of business. The man of business, to avoid working immediately after dinner, must dine late; the idle man must often dine alone, or he must dine late. Our legislators, who do their work at night, and people of fashion, who visit at night, must have little sleep, or they must breakfast late, and, consequently, dine late. They are hardly free agents in the matter, as long as they follow the business, or enter into the social amusements, of their class.

The following rules are the best that can be laid down on this point:—

1. That the substantial repasts should be separated by an interval sufficient to allow the stomach to recruit its power.

2. That abstinence from food should never be so protracted as to induce a sense of exhaustion. Exhaustion from fasting, as from other causes, weakens the digestive power. If, then, the interval between breakfast and dinner be long, a light luncheon should be taken; if the dinner be in the middle of the day, a light supper.

3. A third rule is, that the last heavy meal should be some hours before bed-time.

The process of digestion, when it is easy and the food was required, favours sleep. But sleep renders the digestion slower, and thus prolongs the irritation which uneasy digestion sets up; and the digestion of a heavy meal, by causing uneasiness in the stomach, and by furnishing superfluous or noxious matters to the blood, when from the greater slowness of respiration and secretion these are less readily consumed or excreted, often disturbs the sleep.

As Dr. Holland has remarked, much harm is done in this way by the lateness of the present fashionable hour of dinner. This is well suited to persons who are to spend great part of the night in the House of Commons or at a ball, in whom it prevents the exhaustion that would otherwise result from many hours of excitement; but it is a source of much mischief to persons whose occupations call them up in good time in the morning, and who must, consequently, spend their nights in sleep.

The food allowed to dyspeptics should not be too much restricted as to kind. The body requires a great number of principles for its healthy nutrition, and, unless these are furnished, the incessant waste of the body cannot be repaired. If the diet be too much restricted, some principle or principles may be wanting, which, although they enter only in extremely small quantity into the composition of certain tissues, may yet be required for healthy nutrition.

The error most commonly committed on this point is to debar the

patient from vegetable food. Persons who eat freely of milk, which seems to contain all the nourishing principles of both animal and vegetable food, may abstain with impunity from fresh succulent vegetables and fruits; but persons who eat sparingly of milk, as dyspeptic persons often do, from inability to digest it, cannot long abstain from succulent vegetables, or their preserved juices, without falling, in some degree, into that faulty state of nutrition that constitutes scurvy.

The best diet is, generally, a mixed diet of animal and vegetable food; and this may be sufficiently varied, without including the more unwholesome articles of the two classes.

Persons of weak digestion should abstain from veal and pork, and from all salted, dried, or smoked meats, which experience has shown to be particularly hard of digestion.

They should also abstain from new bread, which is apt to ferment and expand in the stomach; and from pease, beans, and other vegetables, which are hard to digest, and have an especial tendency to cause flatulence. With such restrictions as to the kind of food, and with the restrictions as to quantity which I have before mentioned, the patient may generally be allowed to follow his own desires.

On the question of drinks it is still more difficult to lay down positive rules. Much has been written of late respecting the effects of alcoholic drinks, and opinion is still divided on the use and abuse of them. The following points seem, however, to admit of no reasonable doubt:—

1st. That alcoholic drinks, by the stimulus and support they furnish, are of great service in various diseases attended with exhaustion or depression; or in which there is inability to digest solid food.

2nd. That the habitual use of them in moderate quantity is often beneficial to persons whose occupations are exhausting or depressing; or who have long been accustomed to such stimulus.

3rd. That by the mass of mankind, high and low, they are drunk to injurious excess.

In persons who suffer from indigestion, if taken at all, they should be taken in very moderate quantity, and only at the time of meals, or soon after. If taken when the stomach is empty, they stimulate the stomach when it has no work to perform, and are absorbed more rapidly, and are consequently more apt to cause disorder in the head and elsewhere than at other times.

The quantity that can be taken with advantage, or without injury, varies greatly in different persons, according to the constitution, the size of the body, the mode of life, and the previous habits. Any

quantity is hurtful that oppresses the head, or makes the skin hot, or disturbs the sleep.

The effect of the different fermented drinks, when taken to excess, differs greatly.

The distilled spirits do the greatest direct injury to the stomach and the liver. The victims of spirit-drinking frequently die of organic disease of the stomach, or of that disease of the liver which is here fitly called the gin-drinker's liver; but they suffer little from gout.

The heavy malt liquors, probably from the greater dilution of the spirit, have little disposition to inflame the stomach or the liver, but have an especial tendency to bring on gout. No men are such melancholy victims of gout as men of the lower classes in London, who make their hard work an excuse for drinking enormous quantities of porter.

Wines are free from the strongest objections to both these classes of drinks. They have much less tendency than spirits to damage the liver, and much less tendency than malt liquors to bring on gout.

All seem to be intoxicating in proportion to the quantity of spirit they contain. All, therefore, if taken to excess, injuriously affect the brain.

These leading facts, respecting the different effects of alcoholic liquors, may serve, in some degree, to guide us in prescribing one or the other of them.

Spirits, and the drier wines, are best suited to gouty persons, or to men in the middle of life, who are of gouty families, or whose mode of living disposes to gout,—persons who would do well always to abstain from heavy malt liquors.

Malt liquors, from containing more of the elements of nutrition, are especially suited to agricultural labourers and others, whose work is hard, and whose diet is scanty and not sufficiently varied.

The liquor that is most generally wholesome is wine.

Tea and coffee are not open to the same objections as fermented drinks; but they are doubtless commonly taken to very injurious excess by nervous or excitable people in the upper and middle classes, who do not counteract their influence by bodily labour.

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